DISTRO

051713 #91

engadget

WHAT THE #%$! IS BITCOIN?

THE DIGITAL CURRENCY ROSE FROM THE BACK ALLEYS OF THE INTERNET TO GLOBAL NOTORIETY, BUT WHAT IS IT? AND WHY DO WE CARE?

ALSO INSIDE:

HP'S ELITEPAD 900 AIMS FOR ENTERPRISE

ON THE GROUND AT GOOGLE I/O

GEARS OF WAR'S CLIFF BLESZINSKI ON NEXT-GEN GAMING

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Email that lets you chat with your Facebook, Skype (and now) Google friends.

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ISSUE 91

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FORUM

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WHEN IT RAINS, IT POURS

DISTRO
05.17.13

EDITOR'S LETTER

It's been a slow couple of weeks here through the beginning of May. Everyone, it seems, was saving up to pile all of their announcements at once, leaving us scrambling and our RSS feed spinning. Over the past few days, new phones were announced by BlackBerry, Nokia, Sony and Samsung while Google has been dropping all sorts of stuff in our laps at I/O and even Microsoft got in on the game by confirming Windows 8.1 will be shown next month. Surely someone could have made a few phone calls and maybe pushed their bit of news up or back a week or two.

As I write this, late at night in a hotel in San Francisco, it's Google I/O that's dominating the headlines. New Android boss Sundar Pichai promised a very dev-focused event, moving away from the consumer-heavy fireworks of years past, and that's exactly what we got, with Google spending far more time talking APIs and IDEs than tablets and smartphones.

That's not to say there wasn't anything to talk about for phones. Google unveiled a special edition Samsung Galaxy S 4 running stock Android 4.2. People in the audience cheered wildly when it was announced — and then groaned when they heard the price: $649. If you have the scratch, it hits the Play store on June 26th.

Instead, the biggest news at I/O was on the software and services front, with Google Play Music All Access getting the most hype. It's a subscription-based music service, as is all the rage these days, priced directly to compete with Spotify and the rest: $9.99 a month. For this you can stream whatever you want and download stuff too, again just like the rest. Google tried to talk up the recommendations and the easy radio station-creation aspect of the service, but just how well that pans out remains to be seen.

Google also launched a Hangouts app for iOS, Android and the web, enabling dynamic, asynchronous chats with individuals or groups on Google+. The idea is to break down the platform-specific barriers that other communication systems hold up. Sadly, to embrace that will require moving to yet another chat program, and we're not entirely sure how many people are willing to do that. Again.

And last up, Google totally re-

EDITOR'S LETTER

> "Google unveiled a special edition Samsung Galaxy S 4 running stock Android 4.2."

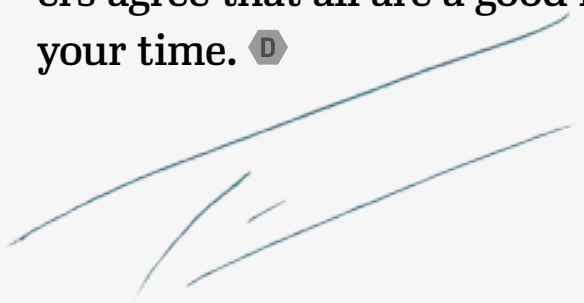
vamped Maps and Google+. The latter got a fresh look and, interestingly, a seemingly powerful Auto Enhance function that takes Picasa's venerable "I'm Feeling Lucky" filter to another level. Maps, meanwhile, gets a fresh, minimalist UI and a lot more smarts.

BlackBerry had its own dev conference going on this week, where it *did* choose to launch new hardware. The Q5 is basically a low-cost version of the Q10, with a QWERTY keyboard and 3.1-inch display. No word on price, but expect it to be cheap: it's intended for developing markets. BlackBerry also made the long-expected move of pledging to develop a dedicated BBM app for iOS and Android. It's something that should have been done years ago.

Nokia, too, threw a new smartphone into the world. It's the Lumia 925 and, while in many ways it's very similar to the 920, it is strikingly different in one major area: materials. This is an aluminum-bodied device and is drastically (50 grams) lighter than its polycarbonate predecessors. The phone also features an improved camera lens array said to fix the sharpness issues of the 920. It's to be priced around $600 in Europe, but we're happy to say that T-Mobile is pledging to bring it to the US — for an as of yet undisclosed sum.

Finally this week, Amazon made some interesting moves. First, it confirmed the purchase of Liquavista from Samsung. Liquavista has a very low-power color display technology that might make sense in future Kindles. Meanwhile, the company went ahead and launched its own currency, called Coins. (Coins that, predictably, feature an Amazon warrior on the front.) With these coins you can purchase apps and media and other digital goods on Amazon, much like Microsoft's Xbox points and the various other virtual, retailer-specific currencies out there. Will people actually use them? Putting $5 worth into the virtual wallet of every Kindle Fire owner is a good start.

In this week's Distro we're diving deep into another virtual currency: Bitcoin. Dan Cooper tells you everything you need to know before you clean out your life savings and turn it digital. We have reviews of the HP ElitePad 900 and Sony Xperia SP, an interview with *Gears of War* designer Cliff Bleszinski, Q&A with NYC's Chief Digital Officer Rachel Haot and a trio of editorials. Our advisers agree that all are a good investment of your time. D



TIM STEVENS
EDITOR–IN–CHIEF,
ENGADGET

GLASSOLALIA, NERD FIGHT AND THE COST OF FITNESS

Touch article names to read full threads

DISTRO 05.17.13

INBOX

THREE DAYS WITHOUT GOOGLE GLASS
ISSUE 90,
MAY 10TH, 2013

"Seems about on par with the endless articles of how people are using Google Glass. I preferred reading this."

—PAROUSIA

THE GREAT COMPUTER COLD WAR OF 1982
ISSUE 90,
MAY 10TH, 2013

"Ah memories! I was a software engineer at Commodore, having been there from the intro of the VIC-20 until the doors were closed on the company in the early '90s. At one time Commodore had a promotion where one could trade in an old computer (or calculator, game console, etc.) for $100 off a new C-64. As a result we had a warehouse full of old electronics, including a LOT of Timex Sinclairs. Thereafter, anyone roaming the halls of our corporate offices would find almost every office door propped open with a Timex Sinclair doorstop :-)

You should see my basement. It's virtually an '80s computer museum. And yes, I still use Timex Sinclairs as doorstops."

—COTTONBALL

"That was quite possibly the nerdiest fight ever."

—CAMELTOEJOE

3D SYSTEMS STAR TREK FIGURES
ISSUE 90,
MAY 10TH, 2013

"In 2234, Lululemon became the defense contractor for Star Fleet."

—JS73091

FITBIT FLEX
ISSUE 90,
MAY 10TH, 2013

"The low price definitely helps make it more appealing given I'm not sure where to start with all of the fitness bands out there."

— JEZZARISKY

SONY VAIO FIT 15
ISSUE 90,
MAY 10TH, 2013

"Standardizing 1080p displays. Thank GOD."

— QUIKMIX

THE iTUNES INFLUENCE
ISSUE 90,
MAY 10TH, 2013

"YouTube has an even bigger impact on setting the music free."

— DANIEL S

"Bingo. And just like any new app or piece of small desktop software, the challenge is getting noticed. There are only so many iTunes/Starbucks 'free track of the week' cards to go around."

— ROCKYCHOCBILL

"First song I downloaded was 'N Sync – 'Bye Bye Bye' from Napster on my 56.6K internal Rockwell modem with Pentium II 350MHz CPU & Intel 440BX motherboard, 128MB SD RAM, 4GB hard disk... & that moment is etched in my memory — won't forget ;)"

— SKYBLUEDREAM

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EYES-ON

THE BOMBER ELECTRIC BIKE

Tap for detail

RUGGED BUILD

QUIET DRIVE

STOPPING POWER

PHOTOGRAPHS BY WILL LIPMAN; BIKE COURTESY OF ELECTRIC BICYCLE OUTLET

IT'S ELECTRIC

Powered pedalers aren't too hard to come by these days, but few offer the stellar design stylings of Stealth's bikes. One such offering is the Bomber: a metal-framed machine with sturdy suspension for taking its licks and a motor that wields just one moving part. As you might expect, energy created while blazing the trail is transformed into extra battery juice.

THE DAMAGE: $11,900

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EYES-ON

THE BOMBER ELECTRIC BIKE

STOPPING POWER
A nine-speed sequential gearbox offers enough drive in all conditions and can be dialed in with the twist of the wrist. Six-piston hydraulic disc brake calipers offer accurate feedback and need only a finger or two to engage.

PHOTOGRAPHS BY WILL HERMAN, BIKE COURTESY OF ELECTRIC BICYCLE OUTLET

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EYES-ON

THE BOMBER ELECTRIC BIKE

QUIET DRIVE
A display provides status info for the battery, which can be swapped out in under 90 seconds and touts a two-hour charge time. Braking energy can also be pushed back into the power pack for extended range.

PHOTOGRAPHS BY WILL LIPMAN, BIKE COURTESY OF ELECTRIC BICYCLE OUTLET

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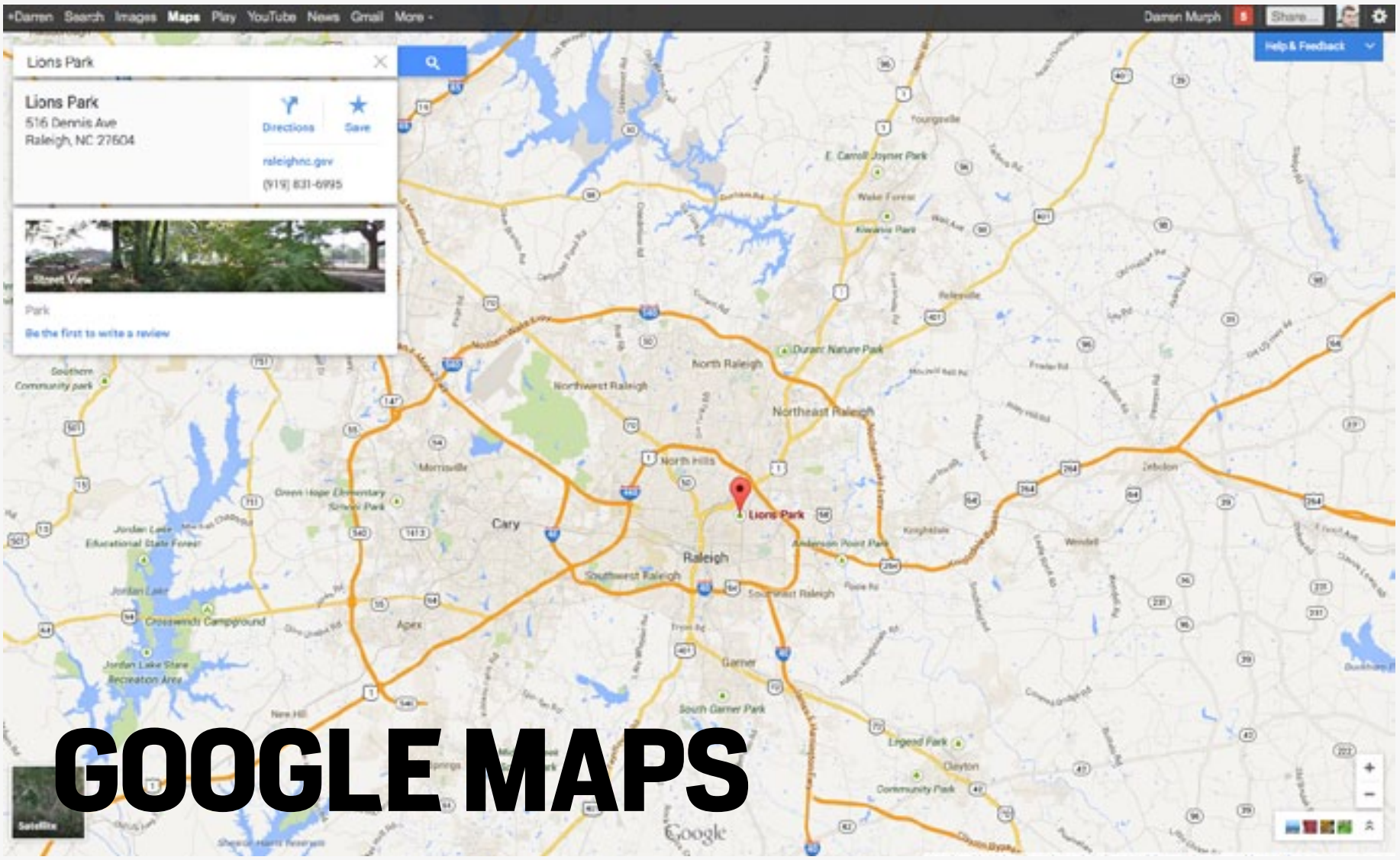
05.17.13

EYES-ON

THE BOMBER ELECTRIC BIKE

RUGGED BUILD
Constructed of CrMo alloy steel, a one-piece frame holds the Bomber together and is up to tackling tough terrain and extreme loads.

PHOTOGRAPHS BY WILL LIPMAN, BIKE COURTESY OF ELECTRIC BICYCLE OUTLET



GOOGLE MAPS

According to Bernhard Seefeld, product management director at Google Maps, "this is the most significant overhaul of Maps since it launched in 2005." We sat down with both Seefeld as well as Jonah Jones — lead designer of Google Maps — following a marathon keynote to kick off Google I/O. Their slice of the event centered on the desktop refresh of Google Maps, but there's actually a lot more to be excited about than what was announced today. Essentially, the preview that I/O attendees were granted access to is the first instance of Maps for desktop using vectors instead of tiles. In lay terms, that's a far sexier rendering engine, and users of the mobile Maps products will already be familiar with how it feels. Seefeld affirmed that the new desktop Maps is slightly quicker to load, but you'll want a WebGL-supporting browser to take advantage of the bells and whistles. In our tests, the Maps experience was far superior in Chrome compared to Firefox.

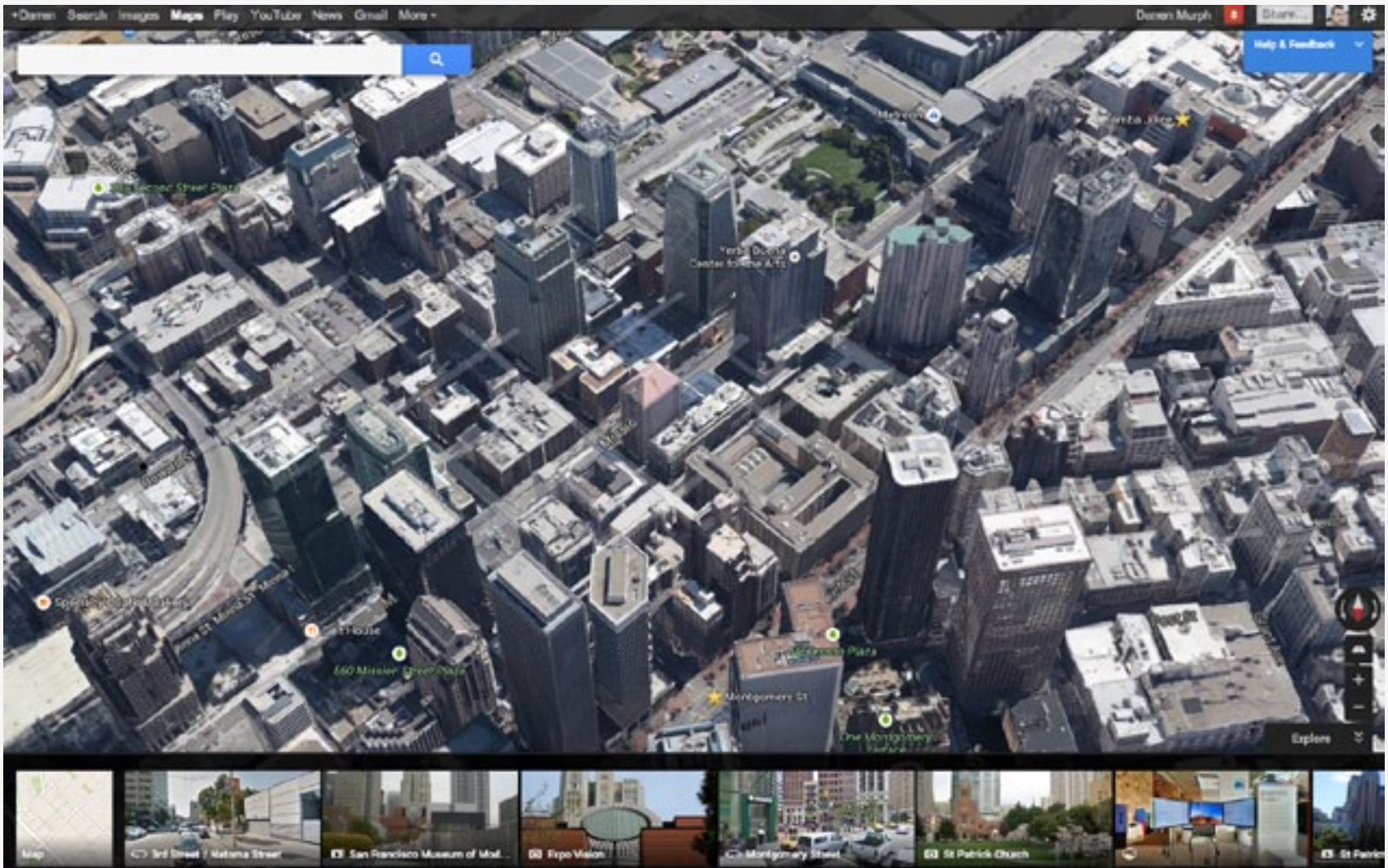
We toyed around with the new layout for a bit, and overall, it looks and feels better. Refreshing, you could say. The search box is now en-

Click on product names to read full stories

PRICE: FREE

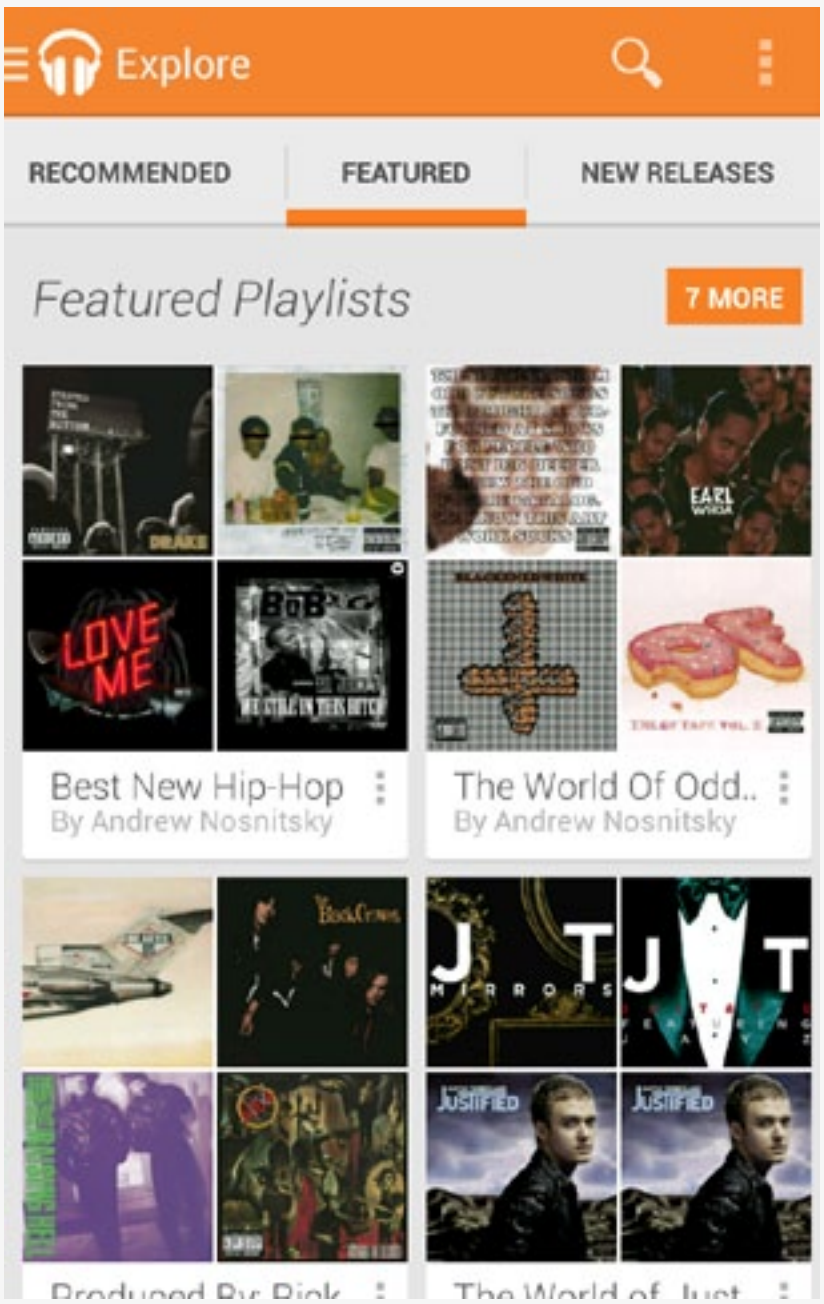
AVAILABILITY: LIMITED PREVIEW

THE BREAKDOWN: THE MAPS REDESIGN GOES VECTOR WHILE ADDING PERSONAL FEATURES FOR FURTHER EXPLORATION.



tirely more useful, popping up intelligent cards beneath places you search for. You'll have glanceable access to operating hours, surrounding traffic and recommended places — that's not new; it's just surfaced in a more sensible way now. There's also dedicated shortcuts to directions and starring. Visually, it looks a lot nicer. The zooms are a little cleaner, and the search box is a tad more useful. Street View is accessed via the search box now, and there's a toggle on the right side that overlays Google Earth data and (impressively) shows it from varying degrees of tilt. The magic really begins after you sign in with your Google account. If you've starred or rated a restaurant using Google Maps or Google+, for example, it'll automatically populate recommended eateries that your friends have rated highly. If, of course, your friends are using Google+.

The real rub here is that most of the new features in Maps rely on data fed in by Google+. We asked Seefeld and Jones if Google had plans to integrate recommendation data from Foursquare, Facebook or any other third-party service. "We aren't actively avoiding those," Seefeld said. The reality is that Google+ data was the most easily accessible as the new Maps were being built, so that's why the integration is so tight. Without saying as much, he gave the impression that future iterations will indeed inhale data from even more services — including rivals — to make the overall experience more useful.



GOOGLE PLAY MUSIC ALL ACCESS

PRICE: $9.99/MONTH

AVAILABILITY: NOW AVAILABLE (US)

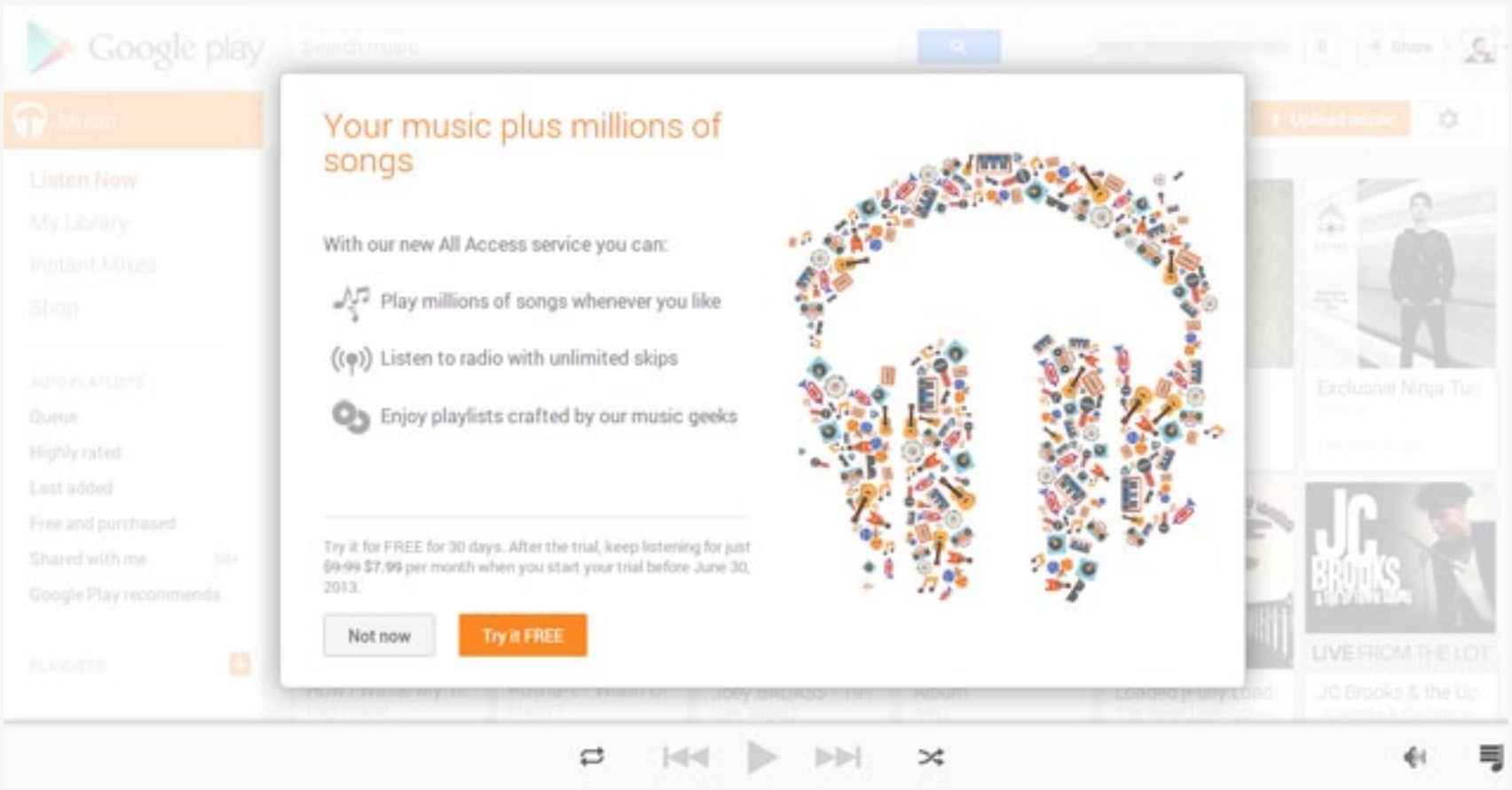
THE BREAKDOWN: THE MUSIC-STREAMING SERVICE LOOKS GREAT, BUT LACKS SELECTION AND CROSS-PLATFORM AVAILABILITY.

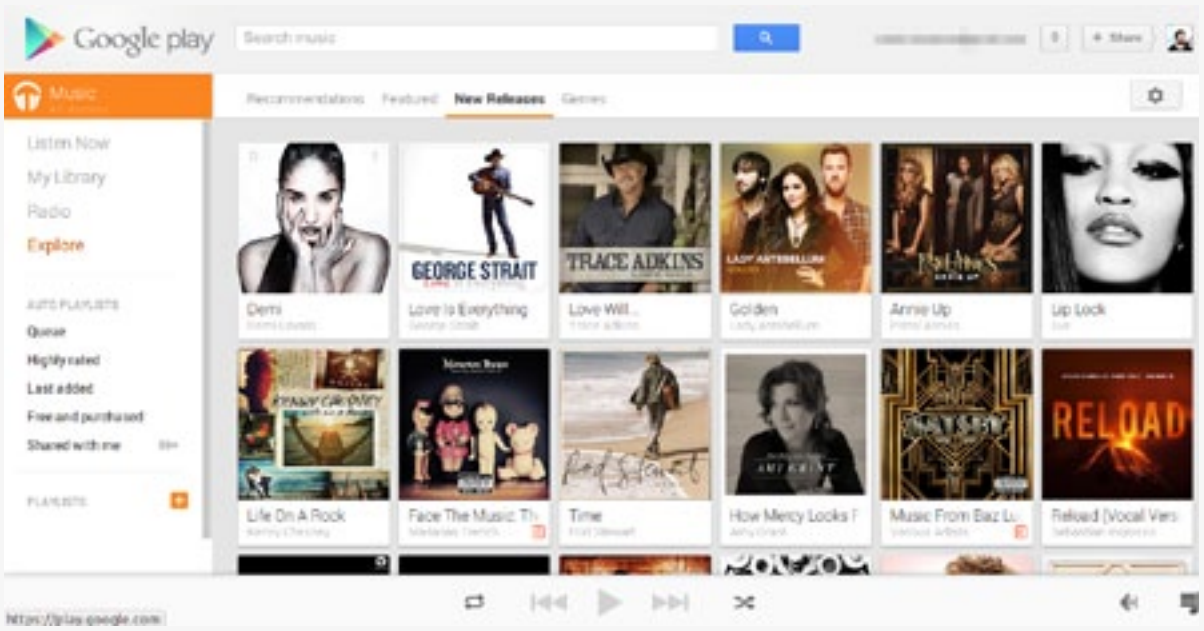
Among the worst-kept secrets to be revealed during the Google I/O keynote was Play Music All Access. Mountain View's desire to create a subscription-based music-streaming service was pretty well-documented. Now it's finally here, for $9.99 a month (or $7.99 if you're an early adopter and get in on the free trial before June 30th), with at least a couple major labels on board. Unlike many of its competitors, Google Play Music All Access is limited to the web and Android. But, while there's no desktop or iOS app, the internet giant has given the browser interface and Android package shiny new coats of paint. Both now sport the same cool gray-and-orange color scheme as the Play Music store. They've also both adopted the card UI that made its debut with Now and is slowly trickling down into Google's other properties.

Click on product names to read full stories

There's now a universal five-star rating system for music and sharing everything from individual tracks to entire playlists is as easy as ever. Album pages now feature much larger cover art and artist pages also have a slightly tweaked design that's cleaner and more attractive. Search results are still a little unnecessarily complex. We dig the search-as-you-type feature, but a separate "best match" lives apart from the previews of artist, album and songs, all of which are delivered through individual lists. And you'll still need to click through to see the full results in each category.

For the first time, Google seems to





be taking music discovery seriously. A new radio tab delivers a constant stream of tunes you might like based on the artist, album or song you've punched in — just like Pandora. There's even a recommended section for checking out stations created by others that Google's vast repositories of data suggest you'll appreciate. There are fewer surprises in the auto-generated playlists than there are on Pandora, but that's not necessarily a good thing.

The most important thing though, is music selection. In that respect All Access is a mixed bag. Modern albums are well-represented and almost all of our searches pulled up exactly what we were looking for. Still, we were quite confused to see that Kanye West's *Graduation* was missing from the results, especially since the rest of his discography was available. The Beatles and Led Zeppelin are both completely unrepresented, while none of Black Sabbath's offerings predate 1980.

GOOGLE+ HANGOUTS

Google's new, unified Hangouts platform focuses heavily on mobile apps, which gives Android and iOS users a common base for text and video chats. In theory, they're the cure for the consistency problems Google's messaging systems have faced for years. Getting set up with either Hangouts app is certainly easy. It just requires a quick sign-in on iOS, and it's virtually automatic on Android if you've used Google Talk (which Hangouts replaces) in the past.

Most settings, such as notification options, are also in familiar places on Android. Notification snoozing is new: you can now tell the app not to bug you for a set period, such as when you're at work or the bar. Google's approach to managing its newly persistent chat history is potentially confusing, though. Rather than implement a global control, Google manages policy changes on a chat-by-chat basis. If you don't want to ever have a permanent (if private) record of what you've said, you'll have to make that choice every time. Google tells us that chats will disappear after 24 hours when the history is turned off.

It's when you get down to business that the changes are truly conspicuous. Google said it was structuring Hangouts around conversations, and it wasn't kidding: the view on starting the mobile app usually involves active and recent text and video sessions, rather than a list of chat candidates. Contacts are there, but you'll have to start a new Hangout or invite new participants to

PRICE: FREE

AVAILABILITY: NOW AVAILABLE

THE BREAKDOWN: HANGOUTS LOOKS TO DISPLACE MESSAGING GIANTS WITH NEW FEATURES AND A REVAMPED TALK INTERFACE IN TOW.

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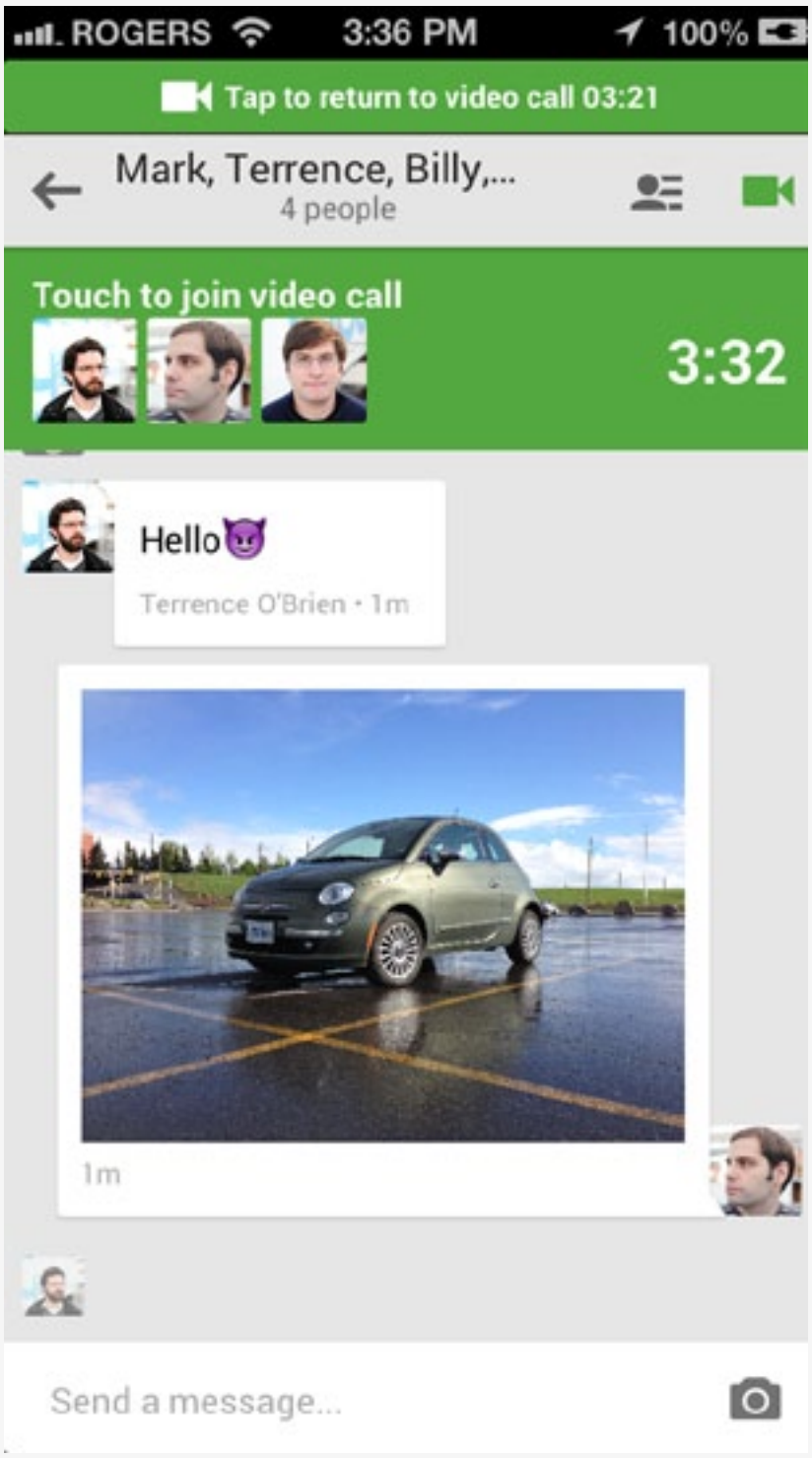

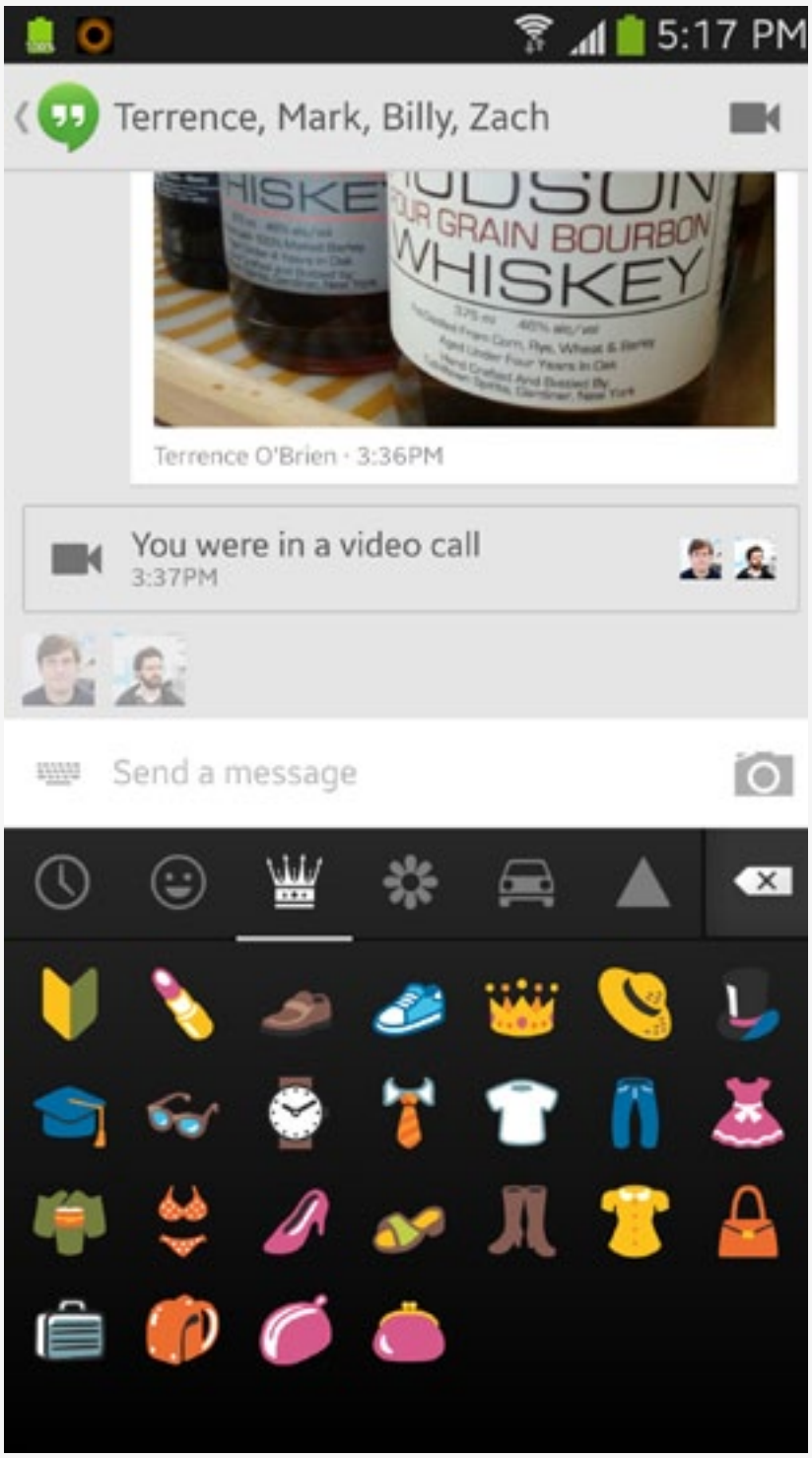

see them. We had no problems starting chats, however, and it's clear that Google spent a lot of time livening up the slightly boring Google Talk interface. It now behaves more like other recent messaging apps, with appealing uses of chat bubbles and emoji. Photos are new, and (mostly) work seamlessly — hitting the relevant button brings up your device's default photo picker, and any image dropped into the chat should remain visible when switching devices.

Group video Hangouts are billed as new, although our experience showed that to be something of a misnomer. The minimalist interface will be familiar to those who've used Google's previous video-capable mobile apps. One nice touch in the new release is the slick integration with related chats. It's easy to tell if someone just posted a photo while you're in a video Hangout, and it's simple to rejoin that same session when it's in progress.

NOKIA LUMIA 925

Nokia's new Windows Phone flagship marks the company's return to metal-bodied smartphones, and in the process, the 925 has become both lighter and thinner than the Lumia 920. This isn't a marginal shedding of a few grams, either — there's a noticeable difference between the two. Likewise, the smaller frame makes the 920 feel all of a sudden rather chunky. Despite the slimmer lines, Nokia keeps the internal specifications largely the same, so you're getting an identical dual-core 1.5GHz processor and 1GB of RAM, although this time there's only 16GB of storage — sacrifices had to be made somewhere, we guess.

If you liked the style and finish of the iPhone or HTC's One, the Lumia 925 might be the Windows Phone that wins you over. It's markedly different from the noisier color explosions we've seen up until now, although wireless-charging covers will offer at least a degree of customization. The plastic back panel (the rest of the body is aluminum) has a matte finish, and it feels more at ease in our hand too. Sadly, built-in wireless charging also disappears. Focusing on that screen, Nokia's decided to go OLED on this sibling device. Color reproduction is, well, mixed: we think whites appeared crisper on the Lumia 920 than on its replacement, but blacks are deeper on the new device and help to make those Windows Phone Live Tiles stand out.

Nokia's new Smart Cam replaces Smart Shoot, its predecessor's burst-shot mode, and it could even replace the standard camera app in practice. You can reassign the camera to launch directly to Smart Cam, and capture 10 images. From there, you can pick out the best shot of the bunch. You can select several different modes by swiping up and down, like some of the settings you'll have seen before on Windows Phone Lens apps. Action Shot combines multiple images of a moving subject to create an animation-style still. Rounding out the options within Smart Cam, Motion Focus is a simpler affair and adds motion blur to photo backgrounds.

PRICE: €469 ($609)

AVAILABILITY: JUNE 2013

THE BREAKDOWN: NOKIA REVIVES ITS METAL AESTHETICS, BUT THE LUMIA 925 IS AN ITERATIVE IMPROVEMENT OVER THE 920.

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NVIDIA SHIELD

PRICE: $350
AVAILABILITY: JUNE 2013
THE BREAKDOWN: SHIELD IS A NICHE, BOUTIQUE DEVICE THAT PROBABLY WON'T FIT INTO YOUR LIFE WITHOUT SOME MEATY PREREQUISITES.

Click on product names to read full stories

NVIDIA's Project Shield is priced at a full $100 step above the PlayStation Vita — arguably the most competent competition for Shield's hardcore-skewing demographic — and even a smidgen over the cost of various full-on game consoles. We can't help but approach our final hands-on ahead of Shield's late June launch with an eye toward that price. Is NVIDIA's Shield worth getting in on early?

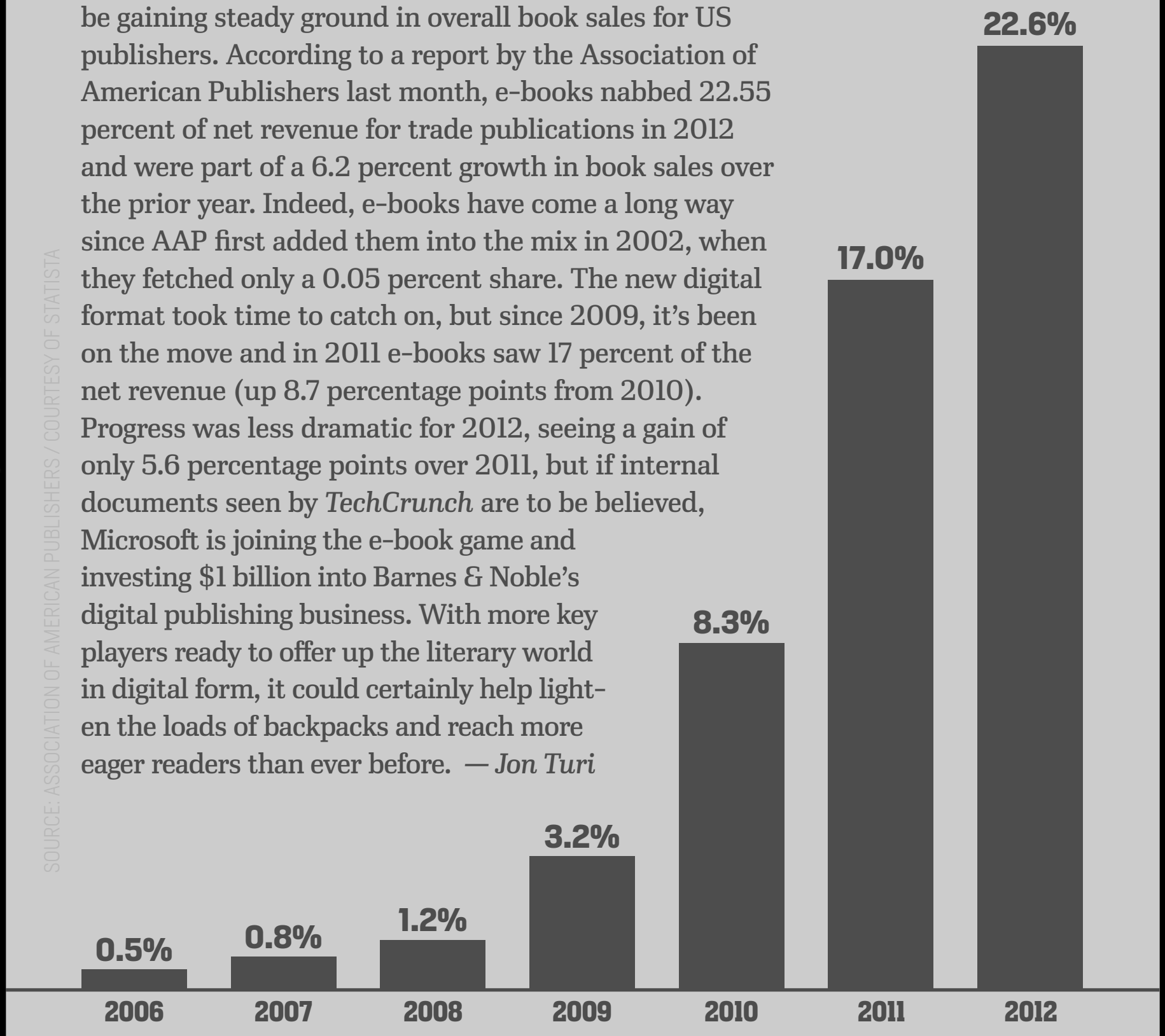
We're inclined to say yes, solely based on the Shield's curiosity factor, but less so when it comes down to actual use. Shield remains a bizarre, left-field entry from a company known for making PC internals. It's a "premium" product, which is marketing speak for "expensive," and the Shield feels expensive. There's a delectable heft and solidity to Shield, and its triggers, dual analog thumbsticks and gorgeous 5-inch screen all serve to highlight its cohesion. Though the clamshell design is a bit clumsy, the Shield is a rather pretty device, adding all the more to its allure.

However, it's easy to enjoy the fleeting moments of early love with Shield. Then you start thinking about its limitations. It's an Android device, and even with Tegra 4, it's unlikely we'll see Vita-quality games. Ah, but it has PC streaming! Should your computer run GeForce Experience software and a GTX 650 GPU or better, that is.

The fact that Shield can stream a huge library of Steam games is incredibly enticing. That promise, however, wears thin when you begin factoring in not just the added cost of a PC, but also one potentially problematic control issue. Due to the Shield's clamshell design, its two analog sticks are depressed deep into the handheld's cavity (deeper than even at CES). Resultantly, the left thumstick always feels just out of reach, while the right one is far enough away that it's easy to rub your thumb against the controller's X and A face buttons. We'll have to see how this stands up to longer-term use in our review, but for now it's a worrisome issue at the very least. D

E-Books Mean Business

The digitally rendered tome finally seems to be gaining steady ground in overall book sales for US publishers. According to a report by the Association of American Publishers last month, e-books nabbed 22.55 percent of net revenue for trade publications in 2012 and were part of a 6.2 percent growth in book sales over the prior year. Indeed, e-books have come a long way since AAP first added them into the mix in 2002, when they fetched only a 0.05 percent share. The new digital format took time to catch on, but since 2009, it's been on the move and in 2011 e-books saw 17 percent of the net revenue (up 8.7 percentage points from 2010). Progress was less dramatic for 2012, seeing a gain of only 5.6 percentage points over 2011, but if internal documents seen by *TechCrunch* are to be believed, Microsoft is joining the e-book game and investing $1 billion into Barnes & Noble's digital publishing business. With more key players ready to offer up the literary world in digital form, it could certainly help lighten the loads of backpacks and reach more eager readers than ever before. — *Jon Turi*



SOURCE: ASSOCIATION OF AMERICAN PUBLISHERS / COURTESY OF STATISTA

Weekly Stat

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Netflix, Reed Hastings Survive Missteps to Join Silicon Valley's Elite

By Ashlee Vance
Bloomberg Businessweek

Netflix has always been an interesting company to watch, but the last few years have been — to put things mildly — more eventful than usual. It's gone from the Qwikster debacle to its big push into original programming with series like *House of Cards* and *Hemlock Grove* (the latter of which has actually attracted a bigger audience), gobbling up more users and a bigger share of internet traffic along the way. In this cover story for *Bloomberg Businessweek*, Ashlee Vance surveys the current state of the company, looking at how CEO Reed Hastings does business, and how he and Netflix got to where they are today.

COURTESY OF NETFLIX

Artificial Emotions
By Neil Savage, *Nautilus*
Just one sample from the recently launched *Nautilus* magazine, this piece from Neil Savage examines the work now being done in a particularly tricky area of artificial intelligence: understanding (and eventually expressing) emotions. And, conversely, just what it is that makes emotions in us humans so special or, perhaps, not as special as we may think.

Stephen Wolfram on Personal Analytics
By Antonio Regalado
Technology Review
Stephen Wolfram has previously written about what he dubbed the personal analytics of his life, and here he talks about that notion further with MIT's *Technology Review*. That includes his more recent work with a personal analytics tool for Facebook, and what he sees as some of the big applications for such tools in the future.

How Bing Crosby and the Nazis Helped to Create Silicon Valley
By Paul Ford, *The New Yorker*
A bit of an attention-grabbing headline, to be sure, but Paul Ford does a nice job here explaining a piece of history that saw Bing Crosby invest $50,000 in magnetic tape technology — originally developed by the Nazis during World War II — and help spawn a new industry. One that, in turn, would give rise to the hard drive and the Silicon Valley we know today.

LET GOOGLE BE A LITTLE EVIL

BY BRAD HILL

GOOGLE'S LAWYERS VISITED the Second Circuit Court of Appeals last week for a polite conversation with three judges and attorneys from the Authors Guild. You remember — the book-scanning thing? Yes, the case is 7 years old and still unresolved. The Circuit Court is just a way station in a longer journey — at issue is whether the Authors Guild's class action suit should be broken apart, forcing authors and publishers to confront Google individually.

The bigger question is about the lawfulness of Google's digital library quest, and the legitimacy of the Guild's copyright charges and request for damages. There are points of similarity to the music industry's litigation saga. And major differences. Google is going to win this thing eventually. If that makes Google evil, it is a necessary evil.

Google is going to win this thing eventually. If that makes Google evil, it is a necessary evil.

Google has a complicated relationship with publishers. But it set things off badly by starting its book-digitizing project in the most cavalier way. Dragging its scanners into amenable libraries, Google began madly copying books without negotiating with publishers for rights or even asking permission. That alone set many "don't be evil" critics on edge.

Publishers sued for copyright infringement in 2005. The two sides spent years hammering out a settlement, which set a clear path for digitizing the analog book industry. The settlement was rejected in 2011 by the federal judge with authority over the case. That judge suggested a new deal with a cornerstone opt-in component in which rights-holders (authors and / or publishers) would consent to the program before Google could touch their works. Google rejected that idea, partly because many books are essentially unowned, or "orphaned" due to a writer's death or anonymity. It's easy to imagine the real reason being too much sand in the gas tank — this is a high-volume, bulk project for Google and cannot be paced by an opt-in mechanism.

So, it was back to the adversarial struggle, with publishers (via the Authors Guild) asserting that Google massively infringed copyright, creating immense business damage by doing so. You might think the copyright charge is a slam dunk, but Google's invocation of Fair Use is readily argued. Fair Use is a judgment call with several deciding components. One of them is how much of the original work is copied. In this case, the whole darn book — no argument there.

Another consideration involves the purpose and character with which the copy is used. On this point, Google maintains that the work is transformed because Google publishes snippets

You might think the copyright charge is a slam dunk, but Google's invocation of Fair Use is readily argued.

(where it has no permission to release more). Those snippets inform internet search results, and ostensibly create a new market scenario for acquiring the book. Hence, transformation and (arguable) fair use.

Fair Use rulings are also governed, in part, by their effect on market value. There can be two aspects of this: the original work's value, and the value of a new derivative market. In the latest stage of this prolonged skirmish, things get loopy on the question of market value. The Authors Guild is claiming damages of $750 per book. Google has released portions of 4 million books (it has scanned 20 million). The Guild did its arithmetic, and is seeking $3 billion in damages. That number might seem audacious, and reminiscent of the RIAA's damage claims for music copying, but it actually represents a minimum statutory damage rate per work in the US copyright code. Nevertheless, the Guild does not dispute Amazon's reprinting of first chapters and other excerpts in its "Search Inside the Book" feature, and if that exorbitant excerpt-

ing doesn't damage a book's value, it's hard to argue that Google's smaller snippets wreak any business havoc.

On the question of derivative market value (how much Google's snippets are worth to Google), the Guild surmises that Google intends to dominate a new market based on excerpts, a market that publishers would be squeezed out of. DearAuthor.com, which closely follows the case, interprets the Guild's position like this: "We sat on our asses and never thought that there would be ways we could monetize our works, but Google created a market for it and now we want the money that such a market could create."

All of this summarizes the philosophical difference in copyright as conceived by rights-holders on one hand, and tech innovators on the other. Is copyright theoretical or practical? Is it abstract or concrete? Media companies often argue on the dogmatic side, as if a violation in principle necessarily causes damage in fact. Every judge in this case has acknowledged the potential benefit to society of digitizing the world's library — or something approximating the world's library. In the circuit court that is deciding the class-action question, two of the judges burbled on about the "enormous value" Google's project could have for culture generally and authors in particular.

If there is a market to be created here, Google would not decline ownership of it.

Google probably took the right tack at the start, building up a substantial collection of digitized books before legally sanctioning the project. The company has spent seven years proving the concept, and is selling judges on its value even as those judges are deliberating the case merits. Evil, savvy or both?

And there is no doubt of Google's imperialistic ambition. If there is a market to be created here, Google would not decline ownership of it. But hey — investment deserves reward, the capitalist would argue, and Google invented the scanners, for Pete's sake, and contracted teams of people to copy 20 million freaking books. The publishers might complain, but how could they have ever done that? Who else is going to make that investment? Microsoft started, but bailed in 2008.

Memo to judges: Wrap this thing up, already. It's going to happen. Google stepped onto the moon, planted the flag and nobody else is going to get this essential digitization done. Is Google evil for its high-handedness? Copying millions of books without due permission lies in a gray area, if not absolutely on the dark side. But in whatever direction Google's moral compass is quivering, it's necessary. Nobody else will get the job done. D

HINGING ON SUCCESS

DISTRO 05.17.13 | FORUM | SWITCHED ON

BY ROSS RUBIN

The announcement of the Acer Aspire R7 was the best example of the company's assertion that it was moving from computers designed *with* touch to computers designed *for* touch. But if having a fancy, even unprecedented, hinge is what defines a touch-optimized notebook, Acer is a bit late to the party.

Last October, Switched On discussed the role that laptop-tablet hybrids — namely convertibles and detachables — would play in the differentiation of Windows 8 devices. Both types have seen their share of support. Detachables have included HP's Envy x2, ASUS' Transformer-inspired VivoTab and Microsoft's Surface. (Dell's XPS 10 is available only with Windows RT.)

Some of these products include attractive features such as Microsoft's ultrathin keyboards or secondary batteries to charge the PC while docked. However, in some ways, convertibles have been more fertile ground for differentiation, with different manufacturers or — in Lenovo's case — different product lines adopting various mechanisms to showcase the versatility of their design. In all but one case, this has been tied to a differentiated hinge design. (The ASUS TAICHI can offer much of the same versatility due to its front- and rear-facing displays.)

The "poses" that a convertible is capable of don't tell the full story. For example, it is faster and easier to get a Lenovo IdeaPad Yoga from closed clamshell to presentation mode than it is to twist around the display on the ThinkPad Twist. However, what quickly comes to the fore is that how, at the end of the day, all these different clever mechanisms result in the same few usage configurations — all support tablet and traditional clamshell modes and most support a presentation mode that exposes the display without the keyboard in front of it. This little trick is something that iPads and most Android tablets cannot do without an accessory such as Apple's popular Smart Cover for iPads.

Acer's proud of the Aspire R7's hinge, which is strong enough to support the screen parallel to the keyboard — this is not a typical usage scenario. However, one can see how it might facilitate collaboration among two or more colleagues standing near the lap-

MODEL	HINGE TYPE	POSES	TRADE-OFFS
ASUS TAICHI	CONVENTIONAL, SUPPORTING DUAL DISPLAYS	OPEN CLAMSHELL; CLOSED CLAMSHELL (PARTIAL); PRESENTATION; TABLET	OUTER SCREEN ALWAYS EXPOSED
ACER ASPIRE R7	"EZEL" HINGE CONNECTED TO CENTER OF DISPLAY BACK	OPEN CLAMSHELL; CLOSED CLAMSHELL; RAISED PLATFORM; PRESENTATION; TABLET (ALMOST FLAT)	TRACKPAD BEHIND KEYBOARD OR INACCESSIBLE WHEN IN OPEN CLAMSHELL MODE
DELL XPS DUO 12	SIDE-MOUNTED DISPLAY HINGE	OPEN CLAMSHELL; CLOSED CLAMSHELL; TABLET	NO PRESENTATION MODE
LENOVO IDEAPAD YOGA	360-DEGREE DISPLAY ROTATION	OPEN CLAMSHELL; CLOSED CLAMSHELL; PRESENTATION; TABLET	KEYBOARD EXPOSED WHEN IN TABLET MODE, NOT FLAT IN PRESENTATION MODE
LENOVO THINKPAD TWIST	TWIST-AND-FLIP HINGE AT BASE OF DISPLAY	OPEN CLAMSHELL; CLOSED CLAMSHELL; PRESENTATION; TABLET	N/A
SONY DUO	SLIDER	OPEN CLAMSHELL; TABLET	SCREEN ALWAYS EXPOSED, NO PRESENTATION MODE.

top. The R7 has a couple of trade-offs, though. In "tablet" mode, unlike most of its competitors, the display is not completely flat against the keyboard.

More controversially, Acer placed the trackpad behind the keyboard on the R7 in the name of bringing the display closer to the keyboard the way it is with Surface or an iPad using keyboard covers and cases from Logitech and Zagg. Embracing the touchscreen at the expense of the trackpad doesn't seem like a wise trade-off, though (even the Surface keyboards have trackpads), and some kind of pop-out or bundled Bluetooth trackpad solution seems like it would have been a better bet. As it is now, those wishing to use the trackpad are forced to put the display even farther away from the keyboard, defeating the intimacy between screen and keyboard Acer wished to create.

Addressing only hinge mechanism flexibility, it is surprising how well the twist-hinge holds up these days. A popular choice on the tablet PCs of years ago, it covers the bases of the clamshell, tablet and presentation modes while allowing the screen to be protected when the laptop is closed and without exposing the keyboard as the Yoga design does. D

DIGITAL JUNK FOOD

DISTRO
05.17.13

FORUM

THIS IS THE MODEM WORLD

BY JOSHUA FRUHLINGER

I'M HANGING OUT IN ATLANTA right now, getting ready to speak at Digital Summit 2013 about things you're probably not terribly interested in. Most importantly, I'm sitting at a bar and just ordered what looks to be a monster of a burger called the "Hot Mess" at a place called Park Bar near my hotel. Despite my disdain for online review sites, it was either this via Yelp or the hotel bar and, well, I find hotel bars depressing.

It's also pretty clear that the only reason I ordered the Hot Mess is because my wife isn't here to give me a hard time about it. No, I'm not a kept man, but I respect her knowledge of health and try to let her guide me most of the time. But when I'm on the road, I sometimes let all bets fall to the floor so that daddy can dig into a burger uninterrupted.

She'd tell me that junk food is a waste of calories, that the immediate thrill of meat and cheese and bread is far outweighed by the damage it does to the system. In general, she'd say, it should be avoided at all costs. And she's right.

But this place has tater tots. TATER TOTS.

Here's the thing, though: She's currently addicted to *Diner Dash*. She played it almost all last Sunday while I was out mountain biking, washing the car and breaking down IKEA boxes. While I'm sure the game is fun, you would have to put me in the most boring situation in the universe to get me to play something like *Diner Dash*.

It's digital junk food.

"Defining digital junk food presumes that there is digital stuff that's good for you."

Defining digital junk food presumes that there is digital stuff that's good for you. A lot of the reading we do — in fact, the reading you're doing right now — hopefully makes you think, challenges you and contains little to no additives or preservatives. At least I hope so.

Many video games are good for you as well. As Steven Johnson explained in *Everything Bad Is Good For You*, video games teach you how to telescope — to think about the distant ramifications of the decisions you make in split seconds. One can certainly understand how that's an important skill.

One could argue that social networking, at least at its core level, is a healthy activity: it contains human interaction, thoughtfulness and even a splash of compassion. That is, if you're doing it right.

To be fair to my wife, it's completely possible that *Diner Dash* is exercising a part of her brain that will ultimately be good for her.

And to be fair to me, it's totally possible that the Hot Mess I just ate made me really happy and satisfied, and I'm going to get an amazing night of sleep and kill it at the conference resulting in fame and fortune. I'll be so happy that I'll bring gifts home for her and everyone wins. Unicorns, rainbows, etc.

But those are residual effects. Fact is, some things we do with our gadgets just aren't good for us. One has to wonder if we will reach a time — just like we did with food — in which we'll need to think about the contents of what we're consuming. How much telescoping does that game have that my kid is about to play? What's the expected time commitment for starting up a *Candy Crush Saga* game, and what will I get out of it?

I mean, the game is called *Candy Crush Saga*. It even *sounds* like junk food.

There are already allusions to health food in our digital diet. Mental Floss, one of my favorite sites, has a namesake that conjures brain cleansing. An online colloquialism, "Eye Bleach," is the act of cleansing one's vision with images of puppies and rainbows after having seen the unseeable, like a bulimic cleanse for untoward things we've done in the digital domain.

Consider this future: an internet governed by health food-like warnings, telling us that what we're about to view or do isn't good for us, that it's not digitally nutritious and that we should probably follow it up with something more well-rounded.

Could happen. Burp. D

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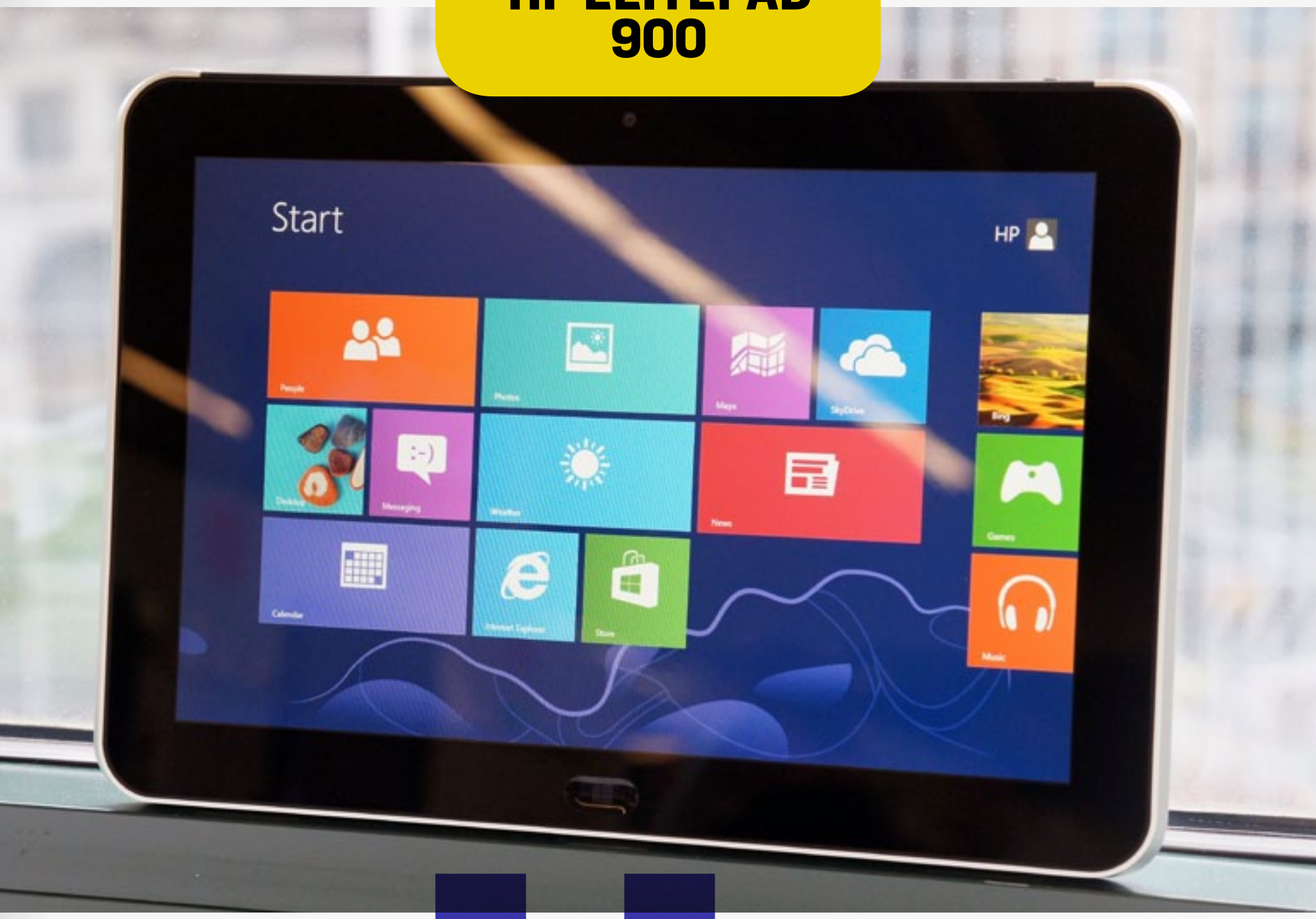
HP ELITEPAD 900



The ElitePad 900 aims for enterprise users with a host of useful accessories, but does it have enough power to get the job done?

By Dana Wollman

HP's business PCs have always been surprisingly pretty. Not that good looks are high on our list of criteria, mind you, but at the very least they make a strong impression. Now that companies have gotten more comfortable with tablets (and Windows 8 in particular), HP is selling the ElitePad 900, its first Win 8 tablet built for the enterprise. Like all those EliteBook laptops that came before it, it has a metal chassis that's not only sleek, but meets the military's MIL-SPEC standards too. Otherwise, it has everything you'd expect from a business tablet:

support for pen input, mobile broadband and security features like TPM. It's also being sold alongside various accessories, including some cases that add further functionality besides just protection from scratches. With a starting price of $699 for the 32GB model, though, it's a little more expensive than its competitors. Does that mean it's a little bit better too?

HARDWARE

We say this unequivocally: the ElitePad is the sexiest tablet HP has ever made. And it's for the enterprise, of all things. Stealing the show is that machined-aluminum rear, with its flush volume rocker and smooth, hard finish. It looks so good, in fact, that it was featured in a splashy ad campaign aired during last year's Summer Olympics (not the place for ugly people — or gadgets, for that matter). In contrast, there's a black, soft-touch panel on the top of the back cover, around where the antennas and NFC chip are. Normally, that might make for a mismatched design but in this case, the contrast between the cold metal and rubbery accent works quite well.

The nice thing about aluminum, too, is that it's lightweight: at 1.38 pounds, the ElitePad is very easy to hold, particularly since the chamfered edges create a natural resting place for the thumbs. (For reference, the tablet

An aluminum casing and soft-touch strip offer great style.

weighs 0.06 pound less than the iPad 4, which is already pretty portable.) Like all of HP's previous EliteBook laptops, it was built to withstand drops, water spills and any other accidents that might happen in the workplace. (The IT guys only expect to refresh your stuff every few years, ya know?) In particular, the tablet meets the military's MIL-SPEC-810G standards, covering drops, vibration, sand, heat, cold, rain, humidity, salt fog and even fungus. We can't guarantee the aluminum finish will stay spotless — we picked up a small scratch ourselves — but at least the thing will remain usable.

Our tour of the ports will be fairly brief, and that's not necessarily a good thing: a lack of ports on the device itself means you'll perhaps be more reliant on those optional SmartJackets, which add a good deal of bulk. Up top, you'll find the power / lock button over on one side, with the headphone jack and screen-orientation lock switch on the other. To the left is the volume rocker, which isn't actually on that chamfered edge but rather, on the back side. Same deal with the SIM slot and microSD reader, which sit behind a pin-accessible door on the right.

The NFC chip, as we said, is located on the rear cover, toward the top where that black rubber strip is; that's clearly marked by an NFC logo. The bottom edge is home to dual speakers, along with the docking connectors you'll need to make use of all those optional accessories (more on those in just a moment). Rounding things out, there's an 8-megapixel camera in the back, paired with an LED flash, along with a 1080p webcam up front.

HP chose to match the nice design with an equally nice display.

DISPLAY AND SOUND

Happily, HP chose to match the nice design with an equally nice display. What we have here is a 10.1-inch IPS panel made of Gorilla Glass 2. The brightness rating tops out at 400 nits, which is about as good as you'll get on a tablet these days (ASUS' products seem to be the exception). The only thing keeping this from being a truly top-notch screen is that the resolution is capped at 1,280 x 800, and that's not even totally HP's fault: after all, Atom processors don't even support resolutions beyond 1,366 x 768. Besides, the company says that its corporate customers aren't demanding higher resolution anyway. And who are we to argue with HP's marketing department?

All told, it's a lovely display. As you'd expect, colors lose some of their punch when viewed from the side or with the tablet lying face-up. Regardless of the angle, though, the screen is always easy to read, especially once you pump up the brightness. We'd also add that the glossy panel reflects surprisingly little light —

This 1,280 x 800 screen looks good, and at most angles too.

or, at least, the screen glare that is there doesn't get in the way.

Oh, and in case you're wondering, the ElitePad supports pen input, just like other Windows 8 tablets aimed at the corporate world. Because the digitizer is made by Atmel, though, and not Wacom, you can't just sub in any old pen if you lose the one you bought from HP. That pen is sold separately for $49 and indeed, we didn't get a chance to test the ElitePad with it.

You may have noticed by now that most of HP's consumer PCs have Beats Audio on board, but since the ElitePad is a business product, it makes do with SRS tech instead. Indeed, without Beats' EQ settings to emphasize the low notes, the sound here is fairly constrained. It's at its worst at top volume settings, but fortunately the speaker setup is loud enough that you can easily keep the volume around 40 / 100 if it's just you listening by yourself. And if you're on a conference call and need to make the sound louder, well, no one cares if your coworkers sound a bit tinny.

ACCESSORIES

Even more than its beautiful hardware, what makes the ElitePad unique are all the accessories designed to go with it. Most of these take the form of so-called SmartJackets — essentially, protective cases that also bring additional functionality. First up

The Productivity case adds a keyboard and USB ports.

is the Expansion jacket ($79), which adds two full-sized USB ports, an HDMI socket and a full-size SD / MMC slot. There's also room for an optional second battery ($99), which is said to extend the runtime by up to eight hours.

Moving on, the Productivity jacket ($199) is sort of what it sounds like: a case with a keyboard built in. When the case is closed, as you probably imagine, the tablet lies face down against the keyboard. When it's open, though, it sits propped up in one of three notches cut into the area above the keyboard. The keys themselves are small and fairly flat — not much better than a netbook, really — but the underlying panel is at least sturdy. The problem is, there's no pointing stick or trackpad, so you'll need to BYOM (bring your own mouse) if you want to click small objects on the desktop. Anyway, you can probably forgive the ergonomics somewhat, since the jacket also includes two USB ports and a full-size SD slot — features you won't find on all keyboard docks.

Finally, moving away from SmartJackets, HP is also selling a $119 docking station, meant to stay in the office, parked on employees' desks. In addition to four USB ports, you'll get an Ethernet jack, VGA and HDMI sockets, a Kensington lock slot and a single audio port. It's heavy, like a paperweight, with a soft-touch finish that keeps it from sliding around on your desk. You might be disappointed to find the screen angle isn't adjustable as it is on the Productivity jacket, but that's where those wide viewing angles come in handy.

PERFORMANCE AND BATTERY LIFE

Though the ElitePad packs the same specs as every other Atom tablet (a 1.8GHz Z2760 processor with 2GB of

WINDOWS 8 SYSTEMS	BATTERY LIFE
HP ELITEPAD 900	7:15
THINKPAD TABLET 2	**10:27**
DELL LATITUDE 10	9:03 / 16:01 (WITH THE DOCK)
ACER ICONIA W510	8:19 / 14:17 (WITH THE DOCK)
HP ENVY X2	7:53 / 12:30 (WITH THE DOCK)
ASUS VIVOTAB SMART	7:30
ACER ICONIA W700	7:13
SAMSUNG ATIV SMART PC (AT&T)	7:04 (WIFI ONLY) / 6:43 (LTE)
LENOVO IDEATAB LYNX	6:10/ 9:24 (WITH THE DOCK)

RAM and a 32 or 64GB SSD), its benchmark scores trail what you'll get from competing devices. Which is strange because Atom tablets otherwise tend to yield very similar performance numbers. It falls about 100 points behind in PCMark 7, for instance, with a score of 1,297 (most Atom devices notch somewhere in the 1,400s). Its write speeds, as measured by ATTO, are slightly slower too, though its read performance is right on target (e.g., you're looking at rates of about 82 MB/s).

Perhaps the biggest gap, though, is in real-world performance. Just booting up the device takes about 30 seconds, whereas the Lenovo ThinkPad Tablet 2 takes 15. Sometimes, too, the accelerometer can be slow to recognize a change in screen orientation. In the Kindle app, we also had to wait not just for the screen flip, but also for the pages to resize themselves after we switched from landscape to portrait. In general, though, the tablet is quick to launch apps and respond to taps and swipes. We also had an easy time in apps like IE10 — pages scale quickly and we didn't encounter any delays when we moved to scroll or zoom in. If the ElitePad is at its best in the web browser, though, we wonder how it'll support the sorts of x86 apps businesses use.

Without the aid of that secondary battery, the ElitePad offers mid-

BENCHMARK	PCMARK7	3DMARK06	ATTO (TOP DISK SPEEDS)
HP ELITEPAD 900 (1.8GHZ INTEL ATOM Z2760, INTEL HD)	1,297	454	82 MB/S (READS); 28 MB/S (WRITES)
LENOVO IDEATAB LYNX (1.8GHZ INTEL ATOM Z2760, INTEL HD)	**1,444**	457	81 MB/S (READS); 35 MB/S (WRITES)
DELL LATITUDE 10 (1.8GHZ INTEL ATOM Z2760, INTEL HD)	1,437	458	82 MB/S (READS); 35 MB/S (WRITES)
ASUS VIVOTAB SMART (1.8GHZ INTEL ATOM Z2760, INTEL HD)	1,400	372	**83 MB/S (READS); 35 MB/S (WRITES)**
LENOVO THINKPAD TABLET 2 (1.8GHZ INTEL ATOM Z2760, INTEL HD)	1,423	**460**	**83 MB/S (READS); 35 MB/S (WRITES)**
HP ENVY X2 (1.8GHZ INTEL ATOM Z2760, INTEL HD)	1,425	N/A	83 MB/S (READS); 34 MB/S (WRITES)
SAMSUNG ATIV SMART PC (1.8GHZ INTEL ATOM Z2760, INTEL HD)	N/A	374	82 MB/S (READS); 36 MB/S (WRITES)
ACER ICONIA W510 (1.8GHZ INTEL ATOM Z2760, INTEL HD)	1,297	N/A	81 MB/S (READS); 28 MB/S (WRITES)

dling runtime. In our usual rundown test (video looping, WiFi on, fixed screen brightness), it managed seven hours and 15 minutes, on average, before crapping out. Now it's true, seven hours for a product like this isn't unheard of, but when you compare the ElitePad to the ThinkPad Tablet 2, which lasts 10 and a half hours, that showing seems a little piddly. Also, it's worth noting that Acer's business-focused Iconia W700 tablet lasts about seven hours, and that's with a heavier-duty Core i5 processor inside. If seven hours is enough, then, why not consider Acer's product, which is more powerful and rocks a 1080p screen?

The Expansion jacket offers a $99 battery add-on.

SOFTWARE, SECURITY FEATURES AND WARRANTY

It'd be incorrect to say the ElitePad is a bloatware-free system, but it's close. The only non-standard apps included here are: Kindle, Box.com, Skitch, Netflix, YouCam (camera software) and HP PageLift (for cleaning up scanned images). Barring that, most of the on-board software features (HP Client Security, HP BIOS Protection, Credential Manager, drive encryption, SpareKey password recovery) are meant for the IT guys, not the end user. On a hardware level, the tablet also has a hard drive accelerometer and TPM — a standard feature for business tablets (the Dell Latitude 10 has this too).

The ElitePad comes with a one-year warranty for both the tablet and primary battery, though you can upgrade to a three-year plan if you want. That matches what's offered with most consumer tablets, but business products often command a longer coverage period — say, two or three years instead of one. HP also has a history of offering longer warranties on its high-end EliteBook laptops as well as its premium consumer notebooks, so we were a little surprised to learn that wasn't the case here.

CONFIGURATION OPTIONS AND THE COMPETITION

The ElitePad starts at $699 with 32GB of internal storage and two free years of T-

The SIM and microSD reader are stashed on the side.

Mobile service (200MB per month, that is, with bigger data packages sold separately). There's also a 64GB version that retails for $749; that, too, comes with two years of free broadband. Similarly, you can buy the tablet with a cellular radio, but there you have to go out of your way to set up service on your own. If that sounds like less of a good deal, consider this: these tablets are compatible with both T-Mobile and AT&T in the US, as opposed to just T-Mo.

In any case, as you'll see, $699 for a 32GB tablet isn't such a hot deal once you take a look at what other companies are offering. Take Dell, for instance. The Latitude 10 is an Atom-powered slate that starts at $499 with 32GB of storage (the 64GB model costs $579). For a real apples-to-apples comparison with the ElitePad, though, you'd need to step up to the souped-up version of the Latitude 10 ($649), which adds pen input, a swappable battery, TPM and HDMI output. Finally, for an extra 100 bucks ($749), you can get all that and an AT&T mobile broadband module, too.

The ElitePad is only at its best when you splurge on the extras.

Basically, then, for the price of the entry-level ElitePad, you're getting more storage, and some of the same key features (namely, TPM and pen support). Having reviewed it, we can also assure you it yields better battery life (about two more hours on a charge, we'd say). The IPS display is nice there, too. As a trade-off, though, the hardware isn't nearly as polished, and at 1.44 pounds, it's the heaviest of the three tablets we'll be mentioning here in this cross-shopping section.

And what kind of reviewer would I be if I left out Engadget's reigning favorite, the Lenovo ThinkPad Tablet 2? Like the others, the TP Tablet 2 is a 10-inch device, with an IPS display and an Atom processor on the inside. TPM comes standard; pen input is an option. You can also buy it with an HSPA+ / LTE radio. It also weighs less than the ElitePad, at 1.25 pounds. (Footnote time: the pen-enabled configurations can weigh up to 1.3 pounds, depending on whether it has a 3G radio).

Now for the things you won't find on a spec sheet: the battery life is best in class. As we said, it lasts about 10.5 hours unplugged — around three hours longer than other Atom devices we've tested.

Also, the optional Bluetooth keyboard is easily the best typing experience you can expect to get on a Windows tablet. Indeed, we'd recommend the TP Tablet 2 just for that alone. The biggest drawback? Price: it costs $749 for a 64GB model with pen input. That's the same as what HP is charging, but it's $100 more than what Dell is offering.

WRAP-UP

On paper, the ElitePad 900 has almost everything we'd expect from a business tablet: pen support, security features like TPM and a dock with Ethernet and extra ports. It's offered with a wider-than-usual range of accessories, including useful goodies like a second battery and keyboard case. Not to mention, it's one of the best-looking tablets we've ever seen, and that's *definitely* not something we demand from enterprise tech.

In fact, our review was going swimmingly — that is, until it came time to test the performance. Even compared to other Atom tablets, which aren't exactly powerhouses either, the ElitePad feels sluggish. Its runtime is lacking too; you could spring for that $99 spare battery, of course, but it's going to make the tablet much, much heavier than 1.38 pounds. Ditto for ports: unless you snap on one of those SmartJackets or plug the tablet into the docking station, you'll have to make do with very few I/O options. Meanwhile, there are other business tablets that either cost less (the Dell Latitude 10 comes to mind) or that deliver longer battery life (that'd be the ThinkPad Tablet 2). All that said, the ElitePad is still a solid tablet in many ways, but it's only at its best when you splurge on the extras. D

Dana Wollman is Reviews Editor at Engadget, a marathoner, lover of puns and a native Brooklynite.

BOTTOMLINE

HP ELITEPAD 900

$699+

PROS

- Gorgeous, durable design
- Bright IPS display
- Useful accessories, including a case with a spare battery

CONS

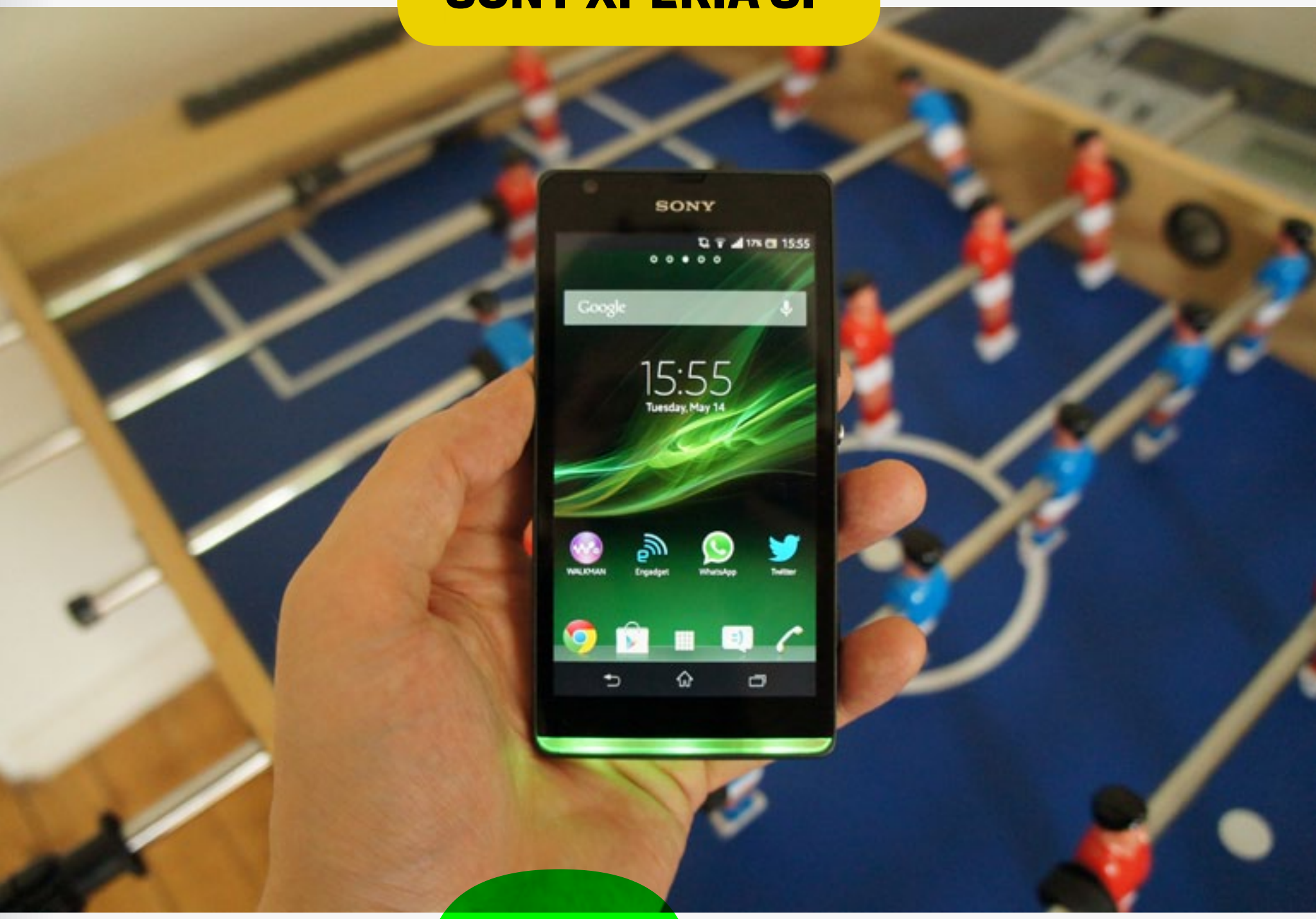
- Sluggish performance
- Middling battery life
- Expensive compared to other business tablets

BOTTOMLINE

The ElitePad 900 is a well-made tablet with a lovely display and lots of business-friendly security features. But sluggish performance and mediocre battery life dampen our enthusiasm.

REVIEW

SONY XPERIA SP



The Xperia SP touts a clean design and capable camera, but does it have enough to warrant the mid-range purchase?

By Jamie Rigg

Sony's Xperia Z took the company into the big leagues this year: the outfit finally has a handset that turns heads and can compete with the established Galaxy and One brands. The Z and its plainer ZL variant weren't the only bullets in the Xperia revolver for 2013, though. Back in March, the company announced the Xperia SP and Xperia L handsets to fall in line behind its flagship. While the L is undoubtedly targeted at the low end of the Android spectrum, the Xperia SP sits in a strange middle ground, with a 720p display and internals that rival the flagships of 2012. It's not some kind

of Xperia S and P fusion, either. The design is vastly different from the sum of its moniker, although the transparent element that defined those devices makes a comeback here.

And thus, with intrigue, we must put the Xperia through its paces the Engadget way. Is it just another Android handset put out so there's something with the Sony name available at a lower price point than the Z? Is there anything other than a transparent piece of plastic to set it apart from the plethora of other touchscreen rectangles that live in the shadow of their top-tier peers? Instead of pondering the answers to those questions yourself, read on for our full review.

HARDWARE

At first glance, there isn't anything particularly striking about the Xperia SP. After prying open the box, you're confronted with nothing more than a rectangle with a see-through bar at the bottom. If anything, our immediate first thoughts were about how *plain* the handset is — there are no physical buttons on the face, for example. This is perhaps especially true of our black / grey model (refreshingly just called "black" on the spec sheet), but it's available in white and a vibrant red as well, should you prefer either of those options. No ringing endorsements in those opening words, you may be thinking, and yes, there are design flaws and quirks that we'll soon talk about. Describing exactly how it looks, however,

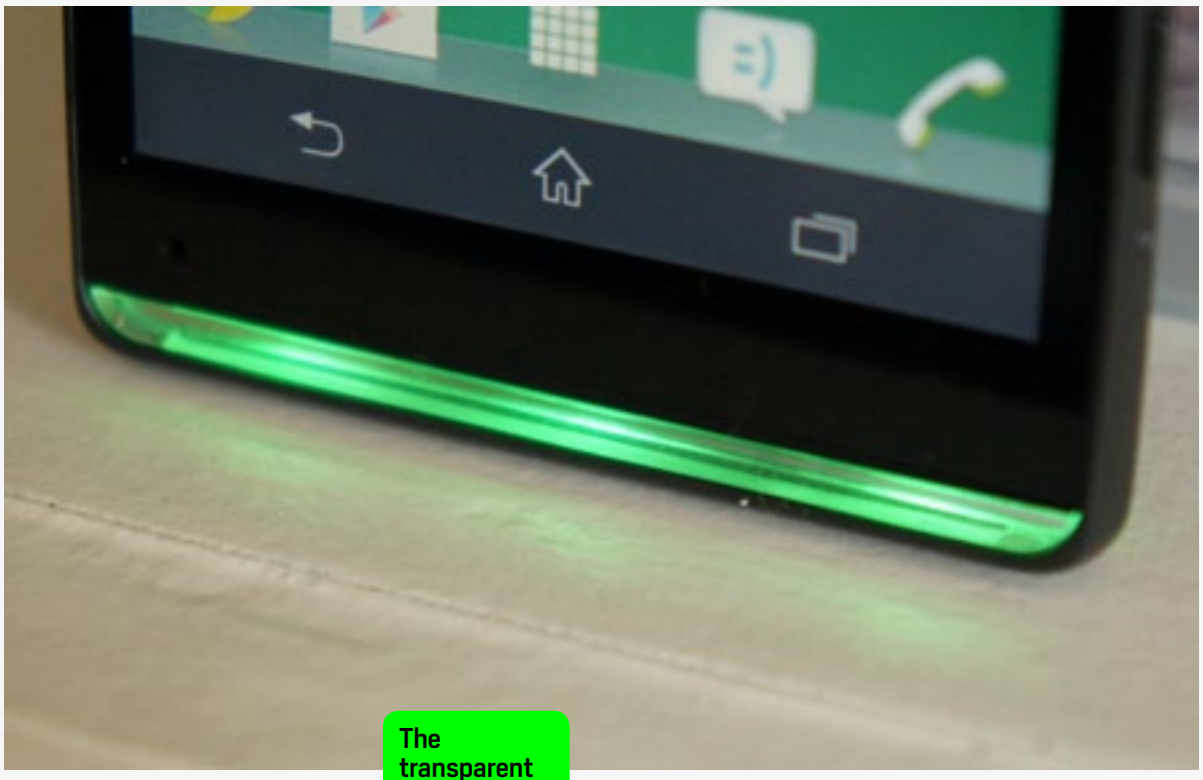
You'll find a ton of personality to fall in love with — warts and all.

doesn't tell the whole story. It takes a little bit of time to really get familiar with this Xperia, and when the introductions are over, you'll find a ton of personality to fall in love with — warts and all.

Aside from a lack of any buttons to press on the front of the handset, there's one piece of Gorilla Glass framing the 4.6-inch display, with the primary mic below it and off to the left (apparently favoring the right-handed caller). The top-left corner houses the VGA front-facing camera, with a silver Sony logo beneath the earpiece at top-center. The back of the device is covered with a removable panel of rubbery plastic, which provides some welcome, light friction when sitting in your palm. There's only a micro-SIM and microSD slot (up to 32GB cards supported) behind it, however, so you'll have to make do with just the one non-removable 2,370mAh battery. While the back panel has a little give to it in the middle from the get-go, repeatedly pulling it off appears to have stretched it and nurtured this creakiness. It's something worth mentioning when you've got your reviewer cap on, but the truth is, after becoming comfortable with the phone, it sounded more like the crackle of a famil-

iar leather armchair than the groan of a perilous jetty.

A neat silver Xperia logo lies in the center of the back panel, and you'll want to remove the cheap-looking sticker beneath it that signifies the NFC chip inside. Above the logo you'll find a hole for the secondary mic, and a tiny LED flash just above that, followed by the main camera lens, highlighted by a raised metal rim for scratch protection. Just to the left of the camera sits a small, oblong loudspeaker grille. The aluminum frame that wraps the sides of the handset adds a dash of "premium" seasoning to the overall build, with two small screws on the left and right edges letting you know care's been taken over its assembly.



The transparent bar returns on the front of the SP.

There's also a pair of ports — a 3.5mm headphone jack on the top edge that spreads into the back panel slightly, and a micro-USB charging port toward the top on the left side. The charging socket bloats the frame by a couple of millimeters, but the asymmetry isn't ugly. It's obviously set back to allow room for the display hardware on the inside, and there's no way it could fit on the bottom edge due to the "transparent element" commanding that region. For right-handed folks, though, the micro-USB port's placement means you can continue to poke at the phone comfortably while it's charging.

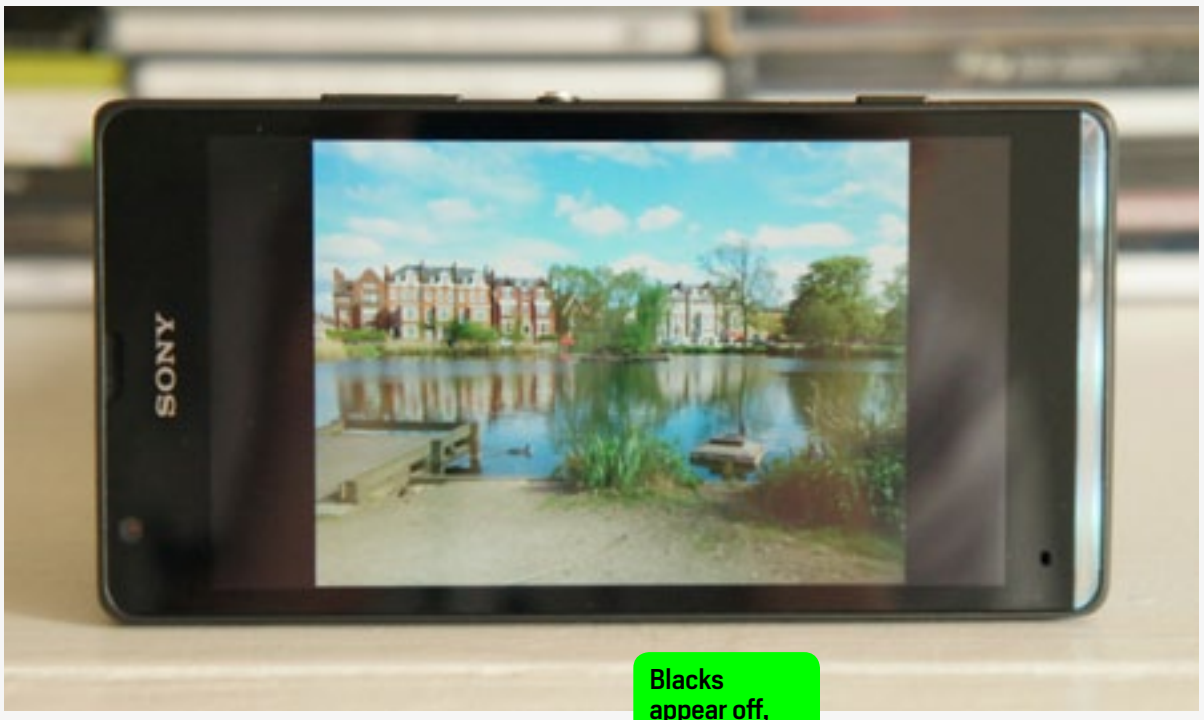
The only physical keys on the device claim the right edge of the frame: a two-stage camera button near the bottom, a volume rocker nearer the top and a machined-aluminum power key in the middle. That on / off button sticks out from the frame a good couple of millimeters — more than on the Xperia Z — and although it looks like a quality part commandeered from a high-end watch, we can only describe it as a blemish on an otherwise plain-but-pretty design. While it's located in the perfect place for rapidly waking the screen, it tends to scratch at your forefinger, drawing unnecessary attention to itself. Significant enough to be worth a mention, but we tended to forget about it easily, so we doubt it'll drive anyone crazy over a prolonged period.

Measuring 130.6 x 67.1 x 9.98mm (5.14 x 2.64 x 0.39 inches), the Xperia SP is closest in size to last year's Xpe-

ria T. Its footprint is a little bigger than both the Xperia S and P — not surprising given the SP's bigger screen. Due to a curved back, it's also a hair thicker than the Z. The device's slightly rounded back panel, smooth corners, edges and general dimensions fit well in the hand, putting the SP comfortably below the cusp of unwieldy (something this editor can't say about the Xperia Z). Apart from an occasional niggle from the scratchy power button, getting around the 4.6-inch display with your thumb isn't a problem. The SP tips the scales at 155g (5.47 ounces), making it heavier than all the other members of the Xperia range previously mentioned. It doesn't require the guns needed to lift something like the Lumia 920, however, and the slight weight increase over many of its peers only makes it feel denser — it speaks to the build quality, if anything.

You'll notice we haven't said much on the transparent element, but we wanted to save the best bit of hardware design for last. Some may think the revival of the see-through bar a gimmick, but it's a playful touch that (literally) lightens up what's otherwise an understated device. It looks especially at home on the SP, as it sits right in between the main body and frame, not flanked by another chunk of phone underneath like on the Xperia S and P. It's your beacon for missed calls, text messages, emails and the like, as well as a warning light when juice is low. While it naturally glows purple when you're active

A silver power button breaks up the all-black frame.



Blacks appear off, but the lighter tones are vibrant.

in Sony's Walkman app, one setting takes timing and intensity cues to pulse more-or-less faithfully along with whatever's playing, if you want to show it off on the bus. Another arguably useless, but no less entertaining feature turns the bar a hue that most closely matches the predominant color of your pictures as you flick through in the Album app. The transparent element, like in the Walkman app, will also pulse in time with your ringtone, and glow solid when on a call, making even the most benign of conversations look important enough to illuminate.

The Xperia SP's 4.6-inch TFT LCD screen boasts the same Reality Display tech as the Xperia Z, albeit at a lower 720p resolution, working out to 319 ppi. However, the display just isn't as good as the Z's, even after you take into account the lower resolution. We can't figure out whether there's just too much light coming through, or whether the closest to black it can get is a very, very dark blue, but the blacks are simply ... off. It goes from noticeable when the two Xperias are compared, to shockingly apparent when placed next to the Galaxy S III's AMOLED display. Whites are spot on, though, and there's even a white balance adjuster in the display settings menu if you think you can do a better job calibrating it manually. Other colors are naturally vibrant without being cartoony.

On the SP, there's the option to enable Sony's Mobile Bravia Engine 2 to jack up the contrast when you're watching videos or looking at pictures. It's great when tucking into your favorite show on the go — everything looks almost hyperrealistic and 3D. Glove mode is another of the display's special settings. Sony's version of Super Sensitive Touch, it engages when you unlock the phone with dressed hands, and worked very well when we tested it out using a fairly thick pair of faux leather gloves.

The Gorilla Glass panel that protects the screen is a magnet for grime and oil.

Sony's Android skin takes full advantage of the resolution. You'll struggle to find pixelation of any kind, and even the smallest font is easily readable. Viewing angles are subpar, with the display quickly washing out after about 30 degrees of tilt. Outdoor visibility isn't the hottest, either. That's nothing to do with the brightness, and you can still easily check notifications and such. But, it reflects most of the light that's thrown at it, so glare can get in the way of doing anything more entertaining. On the subject of brightness, the auto setting is somewhat strange. It appears to use the manual brightness setting as a peg, so it really needs to be manually set to full or nearly full before that auto box is ticked. Otherwise, it's too dark the majority of the time.

The Gorilla Glass panel that protects the screen is a magnet for grime and oil. If you're in the habit of buffing your phone's face on clothing even when it's not necessary, as this editor is, then it's not much of problem. It's confusing, though, to find that after only a few minutes of hands-on time, the screen looks as if it's been attacked by a horde of sticky-fingered toddlers. While the 720p display offers great detail in movies and games, it misses more boxes than it ticks.

SOFTWARE

The Xperia SP ships with Android 4.1.2 running underneath Sony's custom skin. Granted, it's not the latest version, but you're not missing out on much. Compared to other manufacturers' skins, like Samsung's TouchWiz, it's simple and light, favoring performance to flamboyance. That being said, it's not devoid of tricks. From the lock screen, you can launch straight into the camera or Walkman app using dragging gestures, and swiping up or down to unlock the handset creates an effect that's like dragging your hand down window blinds. A similarly trivial animation happens when you hit the power button to induce sleep. The darkness closes in rapidly from top and bottom — a comforting reminder of the days of CRT TVs. It never gets old.

Setting up the perfect home screen is seriously simple and quick.

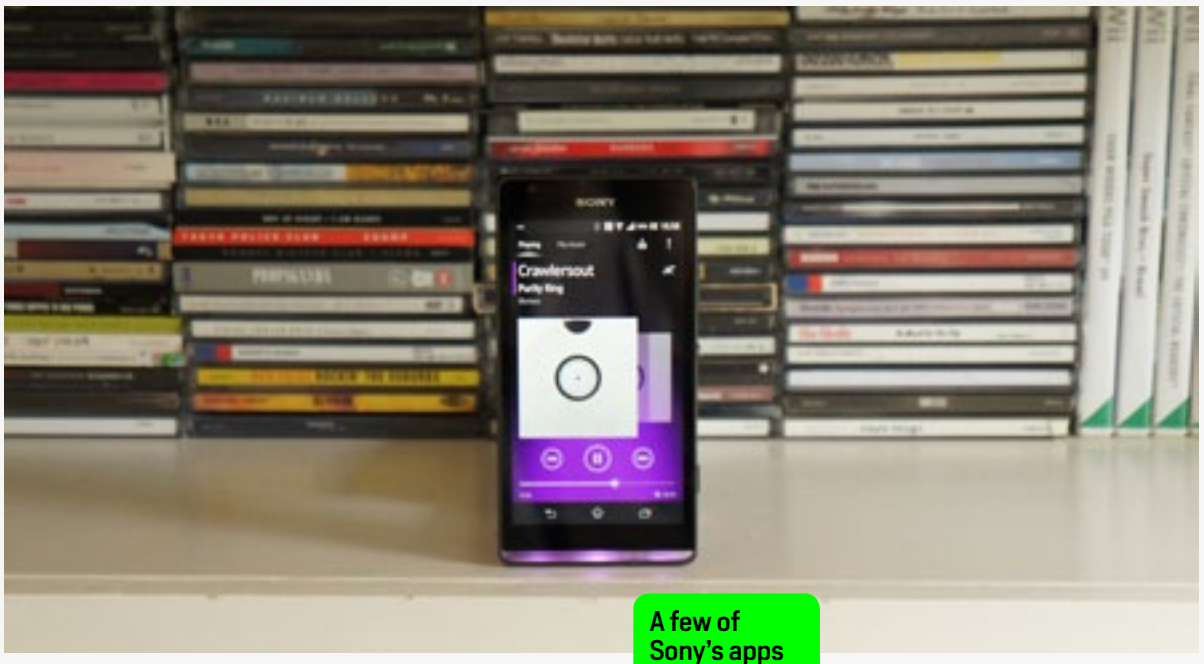
Pressing and holding an unoccupied space on the home screen brings up a menu from which you can add or remove panels, change themes / wallpapers and add widgets or app shortcuts with ease. Setting up the perfect home screen is seriously simple and quick. The notification pull-down only has a few things to switch on and off on the fly, but there's a quick-settings widget that offers a greater selection. Also, the app drawer is a little too utilitarian for our liking, but at least there's a fast way to uninstall apps, like the pre-installed McAfee Antivirus &

The Xperia SP supports Sony's DualShock 3 controller.

Security, which incessantly demands you register from the moment you boot up for the first time.

That's not the sum of bloatware, either, and much of it is uninstallable. You'll probably end up using most of it though, like Google's wares, Facebook, YouTube and various Sony apps (such as Walkman and Album, which make use of the transparent element as previously mentioned). We could do without Sony's media-sharing, music-streaming, feed-aggregating and store-curating apps, however. Sure, leave them on there for us to check out, but don't force us to stare at unnecessary icon clutter forever.

We've already mentioned the Mobile Bravia Engine 2 mode for video and pictures, and within the various menus are a bunch of other settings to play around with. Stamina mode adds battery-management options (although you don't really need to worry about battery life). Clear Phase and xLOUD tech will augment loudspeaker output, and in the Walkman app, you can enable ClearAudio+ that promises higher sound clarity. It delivers, too, making audio crisper and boosting volume slightly. A completely new feature debuting on the PlayStation-certified Xperia SP, and rolling out to other Xperia handsets later, is DualShock 3 controller support. Using an extra cable to connect the pad's charging lead to the SP's micro-USB port,



A few of Sony's apps use the transparent bar for flair.

it's recognized instantly. If you'd prefer to use it wirelessly, one tap will immediately pair the devices via Bluetooth. It's said to be compatible with loads of games, and while it worked perfectly in *GTA III*, communication was problematic in others. Touchscreens aren't the favored input method for some games, so if you remember to bring a pad with you, it could make for more comfortable sessions on long journeys. And when you get where you're going, you can transfer to a bigger screen via MHL out.

With a lack of physical keys on the front of the device, a substitute bar with buttons for back, home and recently accessed programs is (almost) always present at the lower terminus of the screen. While watching videos, it disappears to give you more real estate, but it's persistently awkward in some apps. For example, it remains onscreen while playing various games, and in portrait orientation, it sits there just begging to be accidentally tapped. And you will bump into it fairly often with frustrating results.

CAMERA

The Xperia SP has an 8-megapixel main shooter with a back-side-illuminated Exmor RS sensor and f/2.4 lens, capable of 1080p video recording at 30 fps. Sony opted for a paltry VGA (0.3-megapixel) camera for the front-facer that lacks any advanced settings or features save for snapping stills while recording video, but it'll do for selfies and video chat. The settings for the main camera, however, are numerous and deep. In the normal camera mode, you can manually adjust white balance, ISO, exposure value, light metering and focus style. There's also image stabilization as well as HDR settings, but they can't both be enabled in tandem. A sweeping panorama mode that'll have you spinning almost 300 degrees, an obligatory filter mode, a Superior Auto mode and a scene-selection mode round out the states you can put the camera in. We only find use for the backlight correction + HDR scene mode to snap high-contrast pics in failing light.

Getting into the camera app can be done in one of many ways: launching it as normal, swiping an icon across the display from the lock screen or holding

Crisp images are shot with the help of built-in settings.

the two-step, dedicated camera button. The on-screen keys for switching between modes and tweaking settings are located on the left-hand side, with deeper menus opening in the middle and across the top. It's appreciably easy to navigate and tinker inside the app. There's an on-screen shutter key and icons for switching cameras or between stills and video on the right that are also easily accessible, but when in the correct setup, we used the well-placed physical key almost exclusively.

Lovely, crisp images are easily achievable with the SP's main camera, and the Superior Auto setting will work in your favor the majority of the time, taking the pain out of tinkering with the individual settings in the normal camera mode. In all modes, we favored the automatic white balance setting, which only betrayed reality slightly under artificial light. The Superior Auto setting only takes a maximum of 7-megapixel images, but as all eight megapixels are available in other modes with the same aspect ratio (4:3), it's hard to pick out any significant drop in quality. To get the beautiful high-contrast HDR images, however, you're better off using the normal camera mode. That's not to say that color saturation is bad with Supe-

Low-light performance is better than expected.

rior Auto — you just can't get the full HDR pop.

Low-light performance is better than expected, but outside of Superior Auto, it's hard to keep pictures in focus and anything but really steady hands results in blurry shots. Let the software take over, though, and you can snap at normal speeds with the sensor still managing to suck up every bit of available light. Despite the absence of a burst-capture mode, the focus speed and shutter response mean you can be ready for the next picture in under a second. The small pulsed-LED flash tends to wash images out, but can provide an extra burst of illumination at the correct distance if the low-light modes aren't enough.

Video quality at 1080p is also good on the SP, with no complaints of focus stuttering or jittery changes to exposure. Like on the front-facing camera, you can snap stills while recording, but only one megapixel's worth. With image stabilization turned on, the display tells of a really smooth clip being shot while walking. When viewed on a computer, you can see the video warp in places where the software is compensating for your strides. The microphone picks up all the ambient sounds you want it to, as well. Low-light video comes out noisy when viewed on anything other the SP's screen, but it really draws in a lot of light. We were surprised by the results of some of our low-light sample footage, considering how dark things actually were. There's no HDR video mode, by the way. That's one of the few things the lesser Xperia L has that the SP doesn't. In summation, the camera is a solid all-rounder and more than passable for casual use. It's a minor improvement over the Xperia P's 8-megapixel shooter with Exmor R sensor, but doesn't match up to the photo quality of the Xperia Z.

PERFORMANCE AND BATTERY LIFE

Beating away inside the SP are myriad components that make it quite hard to call it a mid-range phone. With a dual-core 1.7GHz Snapdragon S4 Pro (MSM8960), Adreno 320 GPU and 1GB of RAM, it's more like a 2012 flagship. One blip on the spec sheet is the 8GB of internal storage, and you can only use 5.5GB of that for your own data. There's a microSD slot to top that up, but sadly it only supports cards up to 32GB, so you can only stretch it so far. In our benchmark table you'll see an indication of how it measures up against Sony's big hitter, and a few peers hailing from 2012.

The numbers show the SP trumps several 2012 flagships in practically all performance benchmarks, barring the One X+'s negligibly higher CF-Bench score. The Xperia Z slightly bests the SP in several categories, but that's expected given its extra cores and additional gig of RAM. As they say, though, the proof is in the pudding. General performance is absolutely solid on the SP. Rifling through menus and home screen panels is fast and slick. The

SPECIFICATIONS	SONY XPERIA SP
DIMENSIONS	130.6 X 67.1 X 9.98MM (5.14 X 2.64 X 0.39 IN.)
WEIGHT	5.47 OZ. (155G)
SCREEN SIZE	4.6 INCHES
SCREEN RESOLUTION	1,280 X 720 (319 PPI)
SCREEN TYPE	TFT LCD, REALITY DISPLAY, GLOVE MODE
BATTERY	2,370MAH LI-POLYMER (NON-REMOVABLE)
INTERNAL STORAGE	8GB
EXTERNAL STORAGE	MICROSD (UP TO 32GB)
REAR CAMERA	8MP, BSI, F/2.4
FRONT-FACING CAM	VGA (0.3MP)
VIDEO CAPTURE	1080P, 30 FPS
NFC	YES
BLUETOOTH	V4.0 WITH A2DP, LE PROFILES
SOC	QUALCOMM SNAPDRAGON S4 PRO (MSM8960)
CPU	1.7GHZ DUAL-CORE
GPU	ADRENO 320
RAM	1GB
WIFI	DUAL-BAND, 802.11A/B/G/N
WIRELESS CHARGING	NO
OPERATING SYSTEM	ANDROID 4.1.2 JELLY BEAN

phone keeps up with even the most frantic of swiping. Apps load quickly, and you won't find yourself waiting around like you might with lesser hardware. Internet performance is equally as good, as highlighted by the near 1,000ms score in the SunSpider test. Mobile and desktop sites loaded up in a second or less, and only very rarely did we notice tiling when zooming out from a page. There really isn't much else to divulge when considering basic use, which actually says a lot about how capable the device is.

The SP takes around 45 seconds to boot, but another 15 to 20 before Android and Sony's skin have loaded fully and it becomes useable. Gaming performance — this editor's favorite part of reviews — is really something. As we've said, you get a lot of detail from the 720p screen, and the SP handles games like *Riptide GP* and *GTA III* on the most demanding settings with only the odd dropped frame. For the more passive kind of consumption, the Bravia Engine really makes video pop out at you, and there's the option to enjoy it on an HDTV as the SP supports the MHL standard. The audio performance through headphones will keep your head nodding — you get a nice range, from treble right down to bass, and the ClearAudio+ tech adds to the quality, and the volume. That extra bump in volume is important. With leaky headphones that hang in your ear, cranking it all the way up will only just about

BENCHMARK	XPERIA SP	XPERIA Z	XPERIA T*	GALAXY S III	ONE X+
QUADRANT V2	**8,088**	8,019	4,981	5,875	7,457
VELLAMO 2.0 HTML5	**2,517**	2,198	2,375	1,626	1,897
GLBENCHMARK 2.5 EGYPT 1080P OFFSCREEN (FPS)	31	29	**55**	15	12
CF-BENCH	14,382	**16,079**	9,568	12,922	14,558
SUNSPIDER 0.9.1 (MS)	**1,051**	1,900	1,775	1,194	1,107
ANTUTU	16,466	**19,876**	6,977	10,344	15,921
BATTERY LIFE (RUNDOWN TEST)	6:34	5:35	N/A	**9:02**	7:32

SUNSPIDER: LOWER SCORES ARE BETTER; * BENCHMARK ON ICS

drown out the rattling of a London Underground train. That being said, it's not worth mentioning if you've got a set of in- or over-ears. The small loudspeaker on the back of the handset is fine for hands-free calling, but don't even bother trying to play music out of it. It becomes a distorted cacophony of ill-defined noise.

Using our standard battery rundown test, the SP's sizeable 2,370mAh pack ran dry after six hours and 34 minutes of looping video (with the contrast-boosting Mobile Bravia 2 engine disabled). What does that mean in the real world? Well, it goes a heck of a long way. It'll survive a full working day of basically constant use — pictures, video, browsing, the lot. Moderate to frugal users who stick to less intensive tasks, such as checking the odd website and answering a few emails, should get from waking up one day to home-time the next before having to recharge. It's really nice not to have to worry about being caught out, because even when the percentage charge starts getting low, you know it's still got a lot of life left. Incidentally, after a complete drain, the SP takes just under three and a half hours to fully recharge using the supplied wall adapter and USB cable.

No complaints need be logged regarding network reception. Call quality is nice and clear, with no qualms from those on the other end. The SP sports Bluetooth 4.0 with support for A2DP, a pair of low-energy profiles and several others. It identifies peripherals quickly

The real kicker on the SP is WiFi reception.

and makes connections just as fast. Assisted GPS and GLONASS location are both supported, with homing in taking a matter of seconds, at most. NFC pairing was inexplicably intermittent (is NFC still a *thing*?), but the real kicker on the SP is WiFi reception. Abominable, horrifying, atrocious — all valid words to describe the range at which it'll stay connected. We assume Sony will be able to address this with some kind of future firmware tweak, unless the antennae were lifted from the back of a truck in Shenzhen in 2007. When connected, the signal remains solid, but at 20 feet away from a router with one wall in its path, it's incredible to see it just about maintain a connection.

There are three distinct models of Xperia SP: C5302, C5303 and C5306. Ours is the C5303 that, for reference, supports GSM (850 / 900 / 1800 / 1900), HSPA+ (850 / 900 / 2100) and LTE (Bands 1, 3, 5, 7, 8, 20) networks. The C5302 is an HSPA+-only model, while the C5306 supports a different range of LTE frequencies. Unfortunately, we didn't have a 4G SIM to test LTE speeds on, but over HSPA+ in this editor's South London area, speeds averaged 10 Mbps down and 2 Mbps up.

WRAP-UP

Despite being a brand-new Sony handset with LTE and plenty more to offer, no

Poor internal storage and awful WiFi range are definite cons.

US carrier partnerships for the SP have been announced to date. Over here in the UK, however, all the major carriers are on board. While the SP hasn't yet launched with O2 and Vodafone, you can pick one up for free from £20.50 per month at Orange or £21 per month at T-Mobile, which also offers a pay-as-you-go price of £250 (around $385). If you want to make use of that 4G radio right away, however, you'll need to hit up EE. Again, the phone can be had for nothing on plans starting at £26 per month. To put that in perspective, HTC's One SV is £10 per month more expensive right out of the gate. While we like the One SV as a budget 4G offering, it makes the Xperia SP a relative steal, with Sony's offering trumping it in performance and screen res, among other things.

The Xperia SP is by no means perfect. It's got a grime- and glare-loving screen that misses the mark despite its HD resolution. Other problems: a penchant for bloatware and other small flaws like the terrible WiFi reception. The design may be a little bland for those who aren't interested in the transparent element, but the build quality is solid. Also to its credit are the capable shooter, long battery life and internal hardware that delivers serious performance for the price point. Something that's hard to get across when you're reviewing individual facets is just how charming the handset is. You know it's not punching in the same weight class as the HTC One and Galaxy S 4, but it comes close. So close, in fact, that if you want to consider this a mid-range device, it would be easy to conclude the Xperia SP is the *best* mid-range device. It's attractive, does what you ask of it without complaint and has character, to boot. What more could you want from a pocket companion that's easy on your bank balance? D

Jamie Rigg is a Contributing Editor at Engadget, and a total sucker for any tech he really doesn't need.

BOTTOMLINE

SONY XPERIA SP
£250 ($385) UK, PREPAID

PROS

- Well-built, attractive design
- Good all-around camera performance
- Capable performer

CONS

- Underwhelming display
- Only 8GB of internal storage
- Terrible WiFi range

BOTTOMLINE

An understated, but good-looking LTE device that delivers outstanding performance at a fair price.

Microsoft

Chat.
Flirt.
Vent.
Babble.

Email that lets you chat with your Facebook, Skype (and now) Google friends.

Outlook.com

Try it now

ENGADGET PRIMED

THE RISE (and Rise?) OF BITCOIN

Is **BITCOIN** the prototype for a revolutionary digital economy or will the intrinsic value of anonymity lead to a dead end of black market exchanges?

By Daniel Cooper

ASK ANYONE ABOUT why Bitcoin has suddenly risen to prominence and they may offer one of a number of theories. Perhaps it'll be the one about Cypriots smuggling money out of their country, or the promise of a digital gold rush, or perhaps the tale of a disruptive new economy created by a person who may not even exist. In any case, if you'd like to untangle the myths, half-truths and labored economic newspeak behind the world that is Bitcoin, why not join us here and now?

WHAT IS BITCOIN?

Bitcoin's basic idea is to create digital cash that can be spent as anonymously as the cash in your wallet, rather than as traceable as money in an electronic bank account. There's a tired metaphor that Bitcoin is "digital gold," letting you wander around shelling out gold coins for goods or watching them amass into a fortune — at least in theory. Compare that to a service like PayPal, which can (and will) intervene in transactions at its whim, and you can see why people would desire more fiscal autonomy. Of course, PayPal and major banks expend huge amounts of time and resources to ensure that your money is safe, but with Bitcoin, the security of the system is trusted to your fellow users. Each transaction is publicly verified by the community of Bitcoin users, so as long as there are more honest users than dishonest ones (who would try and steal the cash for themselves) then your money is theoretically safe.

"Satoshi Nakamoto" launched Bitcoin back on January 3rd, 2009, which took the theories of Wei Dai's "B-Money" concept of a digital currency that was impossible to be regulated, and fleshed it out with the necessary hard mathematics to create the system in existence today. Since then, Nakamoto has disappeared from the internet and we were unsuccessful in our attempts to contact them, but it is believed that the name is a pseudonym for a group of coders. Nakamoto produced a nine-page PDF file, which outlined a system for conducting transactions based on "cryptographic [i.e., mathematical] proof instead of trust," and outlined the peer-to-peer infrastructure necessary for it to work.

On January 3rd, 2009, Bitcoin's value relative to the US dollar was less than a penny. Over time, its value began to increase, and by the summer of 2011, the money was valued at over $30. Shortly afterwards, it crashed back to $3, but rose again to $20 in the summer of 2012. It wasn't until 2013 that the currency's value began to surge, and by April 9th, the value of a single Bitcoin had passed the $200 mark — rapidly crashing back down to the $80 level soon after. At the time of writing, the value lingers around

IN THE EARLY STAGES OF BITCOIN'S LIFE, it would have been possible TO LEAVE A DESKTOP ON OVERNIGHT IN THE HOPE OF EARNING YOURSELF SOME CASH, but as the system has grown, THAT'S NO LONGER FEASIBLE.

the $120 to $130 mark, lurching between the two on a regular basis.

So, how does Bitcoin work? Let's labor that gold metaphor a little further, shall we? The coins are created in a process that's called "mining," but it's really a computer validating data called the block chain. What's a block chain? Well, imagine the data for every bank transaction in the world was printed out in one long line. Mining is the process whereby a computer goes through and checks every single Bitcoin transaction ever made, making sure that the books are balanced at the end. The machine (or "node") that successfully validates the block chain (of the hundreds, if not thousands of machines that are competing) is then awarded a small fee of Bitcoins as a prize.

Bitcoin is artificially self-limiting, and to ensure that there is a steady and constant flow of money coming into the economy, validating the block chain is constantly made harder, keeping the successes to a regular pattern. In order to prevent people from circumventing these algorithms and inventing more money, the whole block chain needs to be agreed upon by a majority — so as long as the honest nodes control more CPU power than the dishonest ones, the system is safe. In practice, this means that as long as no more than 49 percent of Bitcoin users are trying to defraud the system, it'll work.

Unlike fiat currencies, where money can be printed to ensure a constant and theoretically infinite flow, Bitcoin is artificially limited to around 21 million units. At a built-in end date of 2140, no more coinage will be created, but miners will still be required to validate each Bitcoin transaction made. While miners currently receive a small cut of every transaction as commission, at the currency's end date, these transaction fees will be the only way of making money — and we'll have to find a more apt description than "mining" to describe it.

In the early stages of Bitcoin's life, it would have been possible to leave a desktop on overnight in the hope of earning yourself some cash, but as the system has grown, that's no longer feasible. While originally this brute-force hashing was undertaken at the CPU level, people

quickly realized that GPUs were far more efficient, and now there is a race to build custom systems specifically designed for mining, but heaven knows what the hardware will do to your home energy bill.

As there is no central bank monitoring all Bitcoin activity, your money is stored locally on your computer. There is no independent record of your wealth, and so it is your responsibility to ensure that it remains secure. There is a risk that those with large Bitcoin accounts make a prime target for hackers, as anyone could theoretically wander off with your wallet data (and therefore your cash), leaving you with no mechanism for getting your money back if the worst should happen.

BIT SPENDING

If you decided that mining looked like too much hassle, you could always just buy some Bitcoins at a currency exchange like Japan's Mt. Gox — which claims to handle 80 percent of global Bitcoin traffic. But once you've acquired your fortune, what do you do with it? You could always cash out, add to your pile in the hopes of becoming a Bitcoin Billionaire or just hit the shops. While one Bitcoin could cost up to $200 to buy, you can break each one down to eight decimal places in order to make smaller transactions.

Whenever you pay for something out of the money in your pocket, theoretically you're in charge of that transaction. While that may not work out in practice, cash transactions are much harder to trace than a documented credit card statement — letting you buy legitimate or illegitimate goods. That's part of Bitcoin's appeal, because you can snag grey market goods, firearms or contraband without the risk of detection by a law enforcement agency. Naturally, Bitcoin has become the most popular unit of exchange on Tor's online "black market," Silk Road, where illegal drugs can be bought anonymously. If you'd prefer not to get an industrial quantity of LSD delivered to your door, then there are a growing number of more mainstream places that now accept Bitcoin. For instance, you can buy premium services from WordPress or OkCupid, and you can even use them to donate funds to *WikiLeaks*. While the EFF had previously accepted donations that way, it has distanced itself from the system saying that it didn't want its acceptance to be misconstrued as an endorsement.

Because Bitcoin has been described as the digital equivalent to gold, currency speculators have been encouraged to buy up huge reserves of the coinage

IF YOU'D PREFER NOT TO GET an industrial quantity of LSD DELIVERED TO YOUR DOOR, THEN THERE ARE A GROWING number of more mainstream PLACES THAT NOW ACCEPT BITCOIN.

in the hope of selling them on at a higher price. Tyler and Cameron Winklevoss (yes, *them*) are believed to have purchased around $11 million worth of the currency, which has been saved on flash drives and stored in separate banks to keep their hoard secure.

POPULAR CURRENCY

Thanks to Bitcoin's volatility against the US dollar, like many other currencies, the system has become a huge draw for investors thinking that the system is a viable way to make a quick buck. It also garners coverage thanks to its shadowy genesis and the regularity of its crashes, which frequently wipe huge sums of money from the value of the fledgling economy.

Then there's the partially debunked theory that during the Cyprus crisis, President Nicos Anastasiades had planned to tax every savings account in the country and use the cash to bail out the failing economy. As locals were unable to withdraw their cash from the banks (to prevent them from "running") the nationals were believed to be hiving their cash into Bitcoin, therefore escaping the levy. The story has prompted a few people, including entrepreneurs Jeff Berwick and Zach Harvey, to develop competing Bitcoin ATMs.

Finally, Bitcoin is now sufficiently visible to appear on the government's radar. The US Treasury Department's Financial Crimes Enforcement Network has recently issued a note saying that "money-transmitting" bodies like Bitcoin exchanges must register with the agency, with failure to comply resulting in either a $5,000 fine or up to five years in jail.

THE ECONOMICS

But is Bitcoin the currency that will revolutionize the world's economy? That depends on which economist you ask. Because the money has a fixed and unchangeable limit, the closest real-world example is the gold standard (yep, more gold) — a historical way to give value to paper money and determine exchange rates between countries. Because there's only a finite quantity of gold in the world, it was easy to keep everyone's currencies at a relatively fixed value. Those who believe in gold standards (like the Austrian School) feel that limited currencies are important for investor confi-

BECAUSE THE MONEY HAS A FIXED AND UNCHANGEABLE LIMIT, the closest real-world EXAMPLE IS THE GOLD STANDARD (yep, more gold).

dence, preventing runs on banks and runaway hyperinflation. But while this system does seem to offer permanent stability, it encourages something even more unwelcome: deflation.

If we want to learn about the downsides of Bitcoin, then we should turn to Nobel Prize-winning economist Paul Krugman, who explained the deflation problem back in 1998. He told the story of a babysitting co-operative that was set up in the late '70s by Washington civil servants. In order to make sure each of the 150-or-so couples did their fair share of babysitting, the group printed a limited number of coupons, equal to an hour of child-minding — so, if you watched your neighbor's kids for five hours, you'd earn five coupons. While it seemed like a perfectly fair system, parents of young children decided not to leave the houses too often, and so began to hoard coupons for the future. When that happened, the amount of coupons "circulating" in this mini-economy dried up, plunging this motley band of babysitters into a recession, mirroring the great depressions of the early 20th century. In the end, the problem was solved by injecting more liquidity into the market — printing more coupons to lower their value and discourage hoarding. This is the key problem that Keynesian economists feel will eventually kill Bitcoin, because as its value increases, people will be less likely to spend it in the hope of making a profit later. Except, by sitting on their money, they'll eventually plunge the coinage into a recession that'll send its value plummeting.

WRAP-UP

The hype, speculation and hysteria that surrounds Bitcoin is nothing new, and whenever an industry gets its digital makeover, history repeats itself. In 1720, the British South Sea Company exaggerated the worth of its dealings to increase its share price. The nation, gripped in a belief that they'd become rich beyond avarice, spent its last penny on buying stock — causing the share price to skyrocket. Naturally, when the deceit was revealed, the company's shares fell from £1,000 (roughly £120,000 in today's money) to £100 (£12,000, same) to send even the government into meltdown. This was history's first bubble.

Those with shorter memories will remember the Dot-Com bubble of 2000, in which wildly speculative investment saw huge amounts of cash ploughed into unsustainable businesses. Bitcoin uses a historically discredited economic principle and doesn't — as yet — offer any practical benefit if you're not buying contraband. Leaving the ordinary user ripe for hacking attacks without any form of recourse means we'd be highly unlikely to put our own money into Bitcoin, at least in its current form. The digital revolution is coming for money, don't doubt it, but we're reasonably sure that Bitcoin won't be the torchbearer for the new world order. D

Dan is a man of many words, most of which are foisted upon his unsuspecting audience on Twitter.

Living with Google Glass (Week Three)

The long view through Glass, on apps, updates and apiarists

By Tim Stevens

It's been a little while since I last checked in with Glass, but it's time to file another report and let you know how Glass is fitting in with my life — or, increasingly, how it isn't. This week saw the return of Google I/O, where Glass, in its near-current state, was unveiled to the world last year. I figure that by the end of this week the Glass

(Week Three)

landscape will have shifted, so before anything tilts too drastically, let's take a final look at where we stand now.

Since my last update, and the subsequent review, Google released the first major update to Glass since the Explorer Edition started shipping. Called XE5, the name makes it pretty clear that we can expect regular updates between now and the anticipated consumer release sometime next year.

What did this update bring? Not an awful lot, if I'm honest, but the updates it does deliver are welcomed. For one thing, overall snappiness seems improved (particularly with voice recognition), as does stability. I got a few odd crashes on the previous build. I haven't had a single one since the update. But, when things are forcefully closed, there's a new crash-reporting feature to help Google's boffins back in CA more quickly find the problem.

Glass will now prompt you with Google+ updates while you're on the go, and also adds improved head detection for the narrow-noggined.

Glass will now prompt you with Google+ updates, responses and Hangout invitations, which is a natural enhancement, and it has a new calibration workflow for head detection. Before, you could tell Glass to disable itself when you removed it, but it only had a binary "on" or "off" setting. When enabled, I found that the headset couldn't detect the faces of a few people with narrow foreheads. Now, when head detection is enabled, Glass will run a little sensor sweep of your noggin to enhance its positional awareness.

All these tweaks have made Glass more pleasing to wear, but as many of you noticed in the taping of our last podcast, I just don't feel compelled to wear

(Week Three)

Glass every day of every week. Indeed, more often than not, I'm leaving Glass behind these days. While I enjoy the novelty of taking candid pictures of what's happening in the world, and I do appreciate being able to see emails instantly when I'm walking down the street, I still can't say that those feature are compelling enough for me to wear Glass around all the time. Not yet, at least.

But, the presence of (unofficial) Facebook and Twitter apps for sharing those photos certainly does add value. I like Google+ a lot and find it's a great place to discuss things, but it's far from the only social network in the game.

Glass continues to be a great icebreaker. As I mentioned in my XPRIZE feature last week, it made for a great way to strike up a conversation. Indeed I conducted my first interview using Google Glass, a conversation with XPRIZE founder Peter Diamandis. It was a great chat and I think Glass did a respectably good job of capturing it, but there are a few problems. The difference in audio levels between Peter and me is quite noticeable, which could be fixed with some deft audio editing after the fact, but that would take a good amount of time. Additionally, I had to focus on keeping my head very still, which resulted in me feeling, and looking, less than totally relaxed in the conversation.

I also enjoyed wearing Glass to speak to a gathering of New York State public librarians, in which I gave a presentation on the evolution of publishing and journalism. I traced the path of getting something — anything — into the public eye and talked about how that's made journalism perhaps too easy. When I snapped a picture of the audience with just a tap and indicated I could have it online and public in seconds, a bit of a murmur spread across the crowd. Predictably it wasn't the speed of the process that evoked such a response; it was the privacy concern.

Join us inside an active beehive as we show off a major feature of Glass: conveniently shot first-person video.

I, of course, explained to the group that you can't do anything

on Glass that you can't already do on a smartphone, but this is another signal that Google perhaps has some further messaging to do on the privacy front before these go mainstream.

Finally, my headset got another new experience this past week. My wife, an amateur beekeeper who runs the blog *Garden Geekery*, wore the headset under the veil while doing a little hive maintenance. The video isn't pristine — the protective mesh definitely obscures things — but the resulting footage is surprisingly quite watchable. You can definitely hear the irritating buzzing of the little things. Also, no stings.

What's next for me and Glass? If you saw me around at I/O, you probably saw me sporting the headset, if only because I wanted devs to come up and tell me what they were cooking up. If you didn't find me and you've got something cool to show off for Glass, feel free to get in touch. D

Tim Stevens is Editor-in-chief at Engadget, a lifelong gamer, a wanna-be racer, and a born Vermonter.

In the days between photo ops, events and interviews, we found that Glass still has a way to go before it becomes one of our daily gadget requirements.

THE ENGADGET INTERVIEW

Cliff Bleszinski

The *Gears of War* designer on next-gen gaming, Oculus Rift and the always-on console

By Billy Steele

WHAT'S LIFE BEEN like for the outspoken former design director of Epic Games since his departure last fall? Well, a lot of taking it easy. Cliff Bleszinski (or CliffyB to many) may not be manning the design reins of an upcoming game, but he's still quite active — especially in chatting up the blooming dev community around Raleigh,

North Carolina. We caught up with Cliff after his keynote at the recent East Coast Games Conference to talk next-gen, annualized game franchises and anything else we could think of. Join us for the full discussion and some unabashed love for the Tarheel State.

With the *Gears of War* franchise being such an integral part of the current generation of gaming and gaming consoles, based on how influential it was to that generation, what are your thoughts on the immediate future of gaming in the next six months to a year?
Well it's kind of like what I was talking about in my talk. It's kind of all over the board. Right? And I'm at the point where there's not a lot of console games coming up that I'm really looking forward to now. It's weird. So it's like I'll just go back to *Candy Crush Saga* right now?

I mean, once you announce next-generation consoles, that's pretty much the death toll for people playing whatever generation is out there right now — because of a lot

Bleszinski's work on the *Gears of War* franchise is a staple of current-gen gaming.

COURTESY OF EPIC GAMES

of us core gamers will not buy what's out there right now because they're saving their dollars for what's coming next. But even then, releasing a next-generation console into the upcoming market is still a decent risk because there are, like I said, more platforms than ever. I play games on my iPad. I play games on my PC. Am I going to want another dedicated box? I'll play the hell out of it, but will it catch fire?

I don't know if we'll ever see the same level of success that the PlayStation 2 saw, which is one of the number-one-selling consoles of all time. So it's a very risky endeavor right now. I'll still check it out and play it, but right now we're seeing a lot of... This generation's ending with a whimper, not a bang, it feels like.

A lot of the major franchises have sort of locked themselves in to a 12-month cycle.

I know, right?

I love playing *Assassin's Creed*, but you get *Assassin's Creed* every...

I can't keep track of them. No offense to Ubisoft.

The last one just came out, and a couple months later, they're already announcing the next one.

That was the thing that got me. Holy crap, we're in a world where the last *Assassin's Creed* just came out, and they're already running TV ads for the next one. Holy $#!*. I don't want to know how many dev teams they have working on that franchise right now. It's amazing.

"This generation's ending with a whimper, not a bang, it feels like."

Games like *Call of Duty* are the same way. If they're going to make money that year, they pretty much have to come out with a new title in time for the holidays.

And you know, it's a free market. If people buy it, they buy it. If those are good, solid follow-ups, more power to them. If they're just phoning it in, you can fool the gamers once, maybe twice. Eventually it's just going to go the way that *Tomb Raider* did the first round, where one was a phe-

nomenon; *Tomb Raider 2* was not bad. Then they just kept rubber-stamping it, and it got old for gamers.

With that said, not just in terms of content per se, but what do you feel the next generation in gaming is going to offer other than just flashier graphics? That's pretty much a given.
I think those who get it with the next generation will get the idea of connectivity and sharing and allowing the user to build the content. There was a great article in *Wired* a while back where they talked about the next generation of consoles, and could *Minecraft* happen on your console? I have a very good relationship with Microsoft, but [there are] a lot of TCRs you'd have to go through, all the stuff you'd have to go through to get your game on Xbox Live Arcade, or even issue updates on; it was a nightmare.

They just announced that they're doing some sort of presser with some of their future plans. I'm curious to hear some of them because it feels like Sony's embraced a lot of that vibe thus far, as far as indie games go and what-not. I feel like Sony's really embraced that vibe, and [the] homebrewed and homegrown movement that's really taken over, and what a cool thing that somebody in his garage made as a mod that is going to go viral tomorrow. Somebody, I think, posted a video at the top of Reddit of somebody [doing] a 50-limo race in *Just Cause 2* and it was hilarious. Bugs notwithstanding, there's a direct correlation between how great your game is and how many viral videos it can make. Honestly, whoever embraces that for this next generation of games on console is going to win.

You said in your talk, too, that people want to create content and not just consume content. The share button that's going to be on the PlayStation controller, and the ability to record, easily record segments of your game...
Think about how hard it is right now to livestream your game.

Yeah, you have to have a separate box and plug everything in.
Yeah, my wife here's built her own computer and sees plenty of that stuff, and getting it properly set up with

good resolution with a reliable stream on Twitch or Ustream is a gong show. It's an absolute mess, and so that's the thing. Look at Kinect — I have a camera right there. Could I livestream me playing this guy or even buffer it and record it for later where you could have it on your console where I could play a game on my console and have my face in the bottom-right reacting to whatever cool moment's happened? And that's more of a software issue than a hardware issue. Bandwidth is an issue too, though.

What do you think about the climate for mobile gaming on non-iOS platforms? Because iOS sort of blew up, and then there's Android and Windows Phone.

Quite frankly, every developer that I've spoken with or worked with has always had their concern about piracy on Android.

"Bugs notwithstanding, there's a direct correlation between how great your game is and how many viral videos it can make. Honestly, whoever embraces that for this next generation of games on console is going to win."

Because it's so open?

Yeah. And that's an issue. The other thing about next-generation consoles and whatever phone wins is it's not just about having the better hardware; it's also about what your ecosystem is. I know I can get great songs on iTunes. I know I can get great apps on the App Store. I have an Android phone, and the store in there is not bad, but I can't even find Vine yet for my Droid. Like, is it out there? I don't know. I've searched for it. I don't think it has even been released. I want to be part of this little mini-phenomenon.

There's an app that you can make animated GIFs with, but no Vine-like app.

Yeah, I know that one. So it's like, "Get with the times." And so I find a good balance in my personal life — the fact that I enjoy my iPad for the iOS eco-

system, and then I use my Android phone for everything else. But it's all about the ecosystem, and, you know, if you have a secure platform where developers can make money and potentially users can create content and make money doing that.

And as far as Windows Phone goes...
From what I hear, it's an amazing phone, but I often joke, "Only Microsoft employees own them."

This sort of piggybacks off that: two Android-based, console-esque gadgets (OUYA and the GameStick) have garnered a lot of attention lately.
Well, I think they'll be garnering a lot of attention due to their open nature. Right? And that's what I was talking about earlier with the next generation of consoles that are embracing that. It's crowdsourcing. It's letting the good stuff rise and the bad stuff go to the bottom, and we're in a world where we're all so connected that if somebody makes a great game on the OUYA, we'll all know about it because it'll go viral, right?

"Quite frankly every developer that I've spoken with or worked with has always had their concern about piracy on Android."

In terms of all of those new platforms — things like the Oculus Rift, Steam Boxes, all of those avenues that are now available for developers — if you had to choose, which of those were the most appealing from a developmental standpoint?
Full disclosure that I am an investor in the Oculus Rift. So I have an agenda, but I wouldn't have put my money in it if I didn't believe in it. The fact of the matter is they're porting *Team Fortress*, they're porting *Skyrim* and they're finding it kind of works. But the best experiences for that product will be made for it. It's the one that excites me the most because I believe in the vision of VR. I think it could be really amazing once you start getting

haptic feedback gloves and things like that. I don't know about the treadmill stuff — it's touch and go with that. But I think it's a very exciting thing.

All you have to do is see that video of the 90-year-old grandmother go viral, and that's magic. You know, when grandma first swung the Wii controller. You know, when your mom first used *Dance Central*. That's when the technology is actively improving the experience, and it's light. People are [saying], "Oh, it looks heavy." No, it's light as... it's like wearing ski goggles on your head. And I really think it's going to be big, and that's the kind of experience that I think excites me the most as far as making some sort of experience that sort of leverages virtual reality, and not just porting a *Gears [of War]* or a *Halo*. Because *Halo* was designed for the pacing of using an Xbox controller, not a mouse and a keyboard. And just like that game, somebody needs to design games that have [a] different type of pacing for that headset. Because your head is turning and your body is turning, right?

"I have a lot of respect for Sony and Microsoft, but it's weird that I see a lot more buzz for the Rift than anything else right now. That's a sign of something."

Do you see any potential for that to be more of a widespread technology that's included with things like consoles? Maybe instead of a Kinect, you get a VR headset?

Who knows if one of the big [companies like] Sony or Microsoft is talking about purchasing it? I have no idea. I'm not involved in the business side. I let Brendan [Iribe, CEO of Oculus] handle that. That's one possible outcome for it, but it could also just be a great PC peripheral. And I'd be OK with that too. If Sony or Microsoft were smart, they'd recognize that this is... I have a lot of respect for Sony and Microsoft, but it's weird that I see a lot more buzz for the Rift than anything else right now. That's a sign of something.

It also speaks to where folks are right now. People are fascinated with crowdsourcing and being a part of making these things.
Here's the thing about crowdsourcing and Kickstarter, and there was all this [hoopla]. I've mentioned this before, but I enjoy reiterating because it's important to me. There was this controversial thing where there was a woman who was allegedly a millionaire or multi-millionaire, and she wanted to kick-start some money for her 9-year-old daughter for her to do her own video game and things like that. And the internet of course attacks her, and there was probably some weird misogynistic, you know, purpose behind it. "How dare she ask for crowdfunding money? She's already a millionaire." And yet at the same time, nobody gets mad at Richard Garriott when he asked for a million dollars to do an *Ultima*-style game when he's the guy who spent $30 million to go to space. And I love Richard, and I think he's brilliant and he's one of my development heroes, but at the same time, people don't recognize Kickstarter is only one-third about the money.

It's also about the community; you get it instantly built and the PR marketing you get. You have "boom." People invested their money, and now they care. They're reading your updates. We bought that cool LED light bulb that you could switch the colors from your iOS device. We were following the updates with bated breath. And you're invested and it's really a cool thing. And yeah, there are plenty of Kickstarters that don't make it, but you know crowdfunding and crowdsourcing... it's really none of us are as dumb or smart as all of us.

Recently there was a bit of a debate about the next generation of consoles being always on and cloud-streaming and so on. Your comment was that you felt that the always-on console is probably closer than we expect, and it's something that's probably going to happen sooner rather than later. Do you think gamers really care about technology like that, or do they just care that it works?
If *SimCity* and *Diablo III* launched without any errors, I guarantee you we would see a drastically different scene. We wouldn't have seen the uproar that we did, and once

those games start working fine, nobody seems to mind. Are there people who don't have broadband? Absolutely. And that sucks. Is it bull$#!* that people don't have a great connection in many parts of the world like in the United States? Absolutely. Is that going to stay the same? I really frickin' hope not. You hear about Google Fiber and some crazy broadband WiFi being rolled out in various cities. It's coming.

"... You're on the road with your phone, and you can polish your sword in some sort of mini-game so when you get back online it's that much sharper. That's the way to keep the game always with you, and whoever figures that out will win."

I talk about Microsoft and Xbox, and they bet on the Xbox One. If you want to be on Xbox Live, you have to have broadband, and they said, "For all those dial-up people, forget it. It's not going to happen." And we're in a world where American Airlines has WiFi on all their flights now. It's just... the internet is an amazing thing, and everybody wants it everywhere — if for anything just for e-commerce so I can just one-click something on Amazon on my damn phone. So who knows what that always-online console will be? Maybe it'll be broadband, but then there's a backup for 3G connection or 4G, right? There are always options for this sort of thing, and maybe it's not always on. Maybe it checks in once in a while. I don't know what the answer is there, and if I did, I'd potentially violate several NDAs throughout various companies. But at the end of the day, if the ecosystem is great and the service just works, people won't mind.

Right, if it's reliable. I think that's one of the big things people are getting bent out of shape over is "always online" or "always connected" doesn't mean that you're pulling down, streaming wide-open all the time. That's what they assume, that you're streaming 1080p video. It's like, "No.

This is just an encryption check to make sure that you're not stealing content that people work really hard on." And it's one of those things you could potentially do with a 3G connection — just to check in. They don't understand. They think it's black and white with that. And also, if you're able to stream games, there are ways of developing a game that the first part you're playing is the first hour, with maybe similar textures that you don't notice that they're procedural or something like that, while the rest of the game backloads, or you can tell it to download before you go to bed, or auto updates — all sorts of crazy options that are available in this space in order to ease the pain.

Another thing that Microsoft trotted out at E3 last year with SmartGlass was the second screen. Right now, it's really just used to consume content. What about a place for something like that in gaming? Maybe you're playing on your console, and you have a tablet with SmartGlass, where you're working through *Halo* or whatever, and you have your maps and whatnot.

Yeah. We had talked about this at Epic a while back, and I think they're doing something like that on *Watch Dogs*. One of my visions for that type of thing was the classic I'm playing some sort of game and I get to a door that's locked, and my wife is on her iPad, and "Hey Hun, would you load up that little app and hack this door for me?" She stops what she's doing, goes into some game that's some sort of, you know, some version of a puzzle game, some fun little puzzle. She gets points. I get points. Doors unlock. Boom. Or she goes to an overhead map and changes the street like so the cars crash for me, right?

So it's co-op and it's second screen, sort of?

Exactly, and then you're on the road with your phone, and you can polish your sword in some sort of mini-game so when you get back online it's that much sharper. That's the way to keep the game always with you, and whoever figures that out will win. And there's another variant of that that I'm spacing on right now and I can't remember.

Live-tweeting something is fun to do, right? I haven't

had a chance to use SmartGlass yet, to be fair, but one thing I know is, a show like *[The] Walking Dead* is fun to tweet about when it's on. You kind of feel like you're participating in this big conversation, and you're watching not only with your spouse, but also with thousands of people if you have a big social following. The problem with the second-screen experience with a [show] like *Game of Thrones*, is the world is so deep, there are so many things that you can't do much alongside of it. I don't need to be reading Daenerys' history while Tyrion Lannister's [doing a] monologue because I want to catch every delicious bit of dialogue that's been written for him.

You have notoriously loved Nintendo, and the classic Nintendo titles, but you've never developed anything for Nintendo.
They never called. Plain and simple.

Lastly, in your talk, you spoke about and we chatted a little bit about advocating for the Raleigh area and the East Coast gaming scene. Is that what you're focused on now in the interim?
I'm gestating a few ideas. I also have a couple local investments I'm working on. I'm enjoying the time off right now, to be honest. It's kind of nice to go to bed whenever you want, get up whenever you want. But sooner or later I want to come back, and I have some ideas for some things I want to do, and I want them to be here. I mean, there are direct flights to LA now, you know? Like I said, bet on an emerging market, and I'd wager that I could attract a pretty good talent pool — hopefully from just being visible in the business. Hopefully I didn't scare everybody away for the various things I've said. But hopefully [I'll] build up a team and do something cool again, but you know, not for a little while. I want to enjoy the summer first.

Thank you.
Thanks, man. D

Billy is an Associate Editor at Engadget, sports a pretty decent beard and desperately wants to be on Wipeout.

THINGS COME APART

VISUALIZED

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TODD MCLELLAN / COURTESY OF THAMES & HUDSON

THINGS COME APART

Toronto-based commercial photographer Todd McLellan has always been a hands-on type of guy, and the quest to satisfy his curiosity has led him to disassemble things like stereo receivers, rotary phones (disappointingly few parts), computers and even an airplane. For his new book *Things Come Apart* (Thames & Hudson), he photographed an array of objects, both old and new, like this Apple Macintosh, which he painstakingly dismantled, more to commemorate thoughtful design than simply for the sake of art. As to the future of these parts — currently in storage — McLellan said they may come back together, although, as in the case of his Raleigh bike, they may take on slightly different forms.

TODD MCLELLAN / COURTESY OF THAMES & HUDSON

RACHEL HAOT

COURTESY OF NYC MAYOR'S OFFICE

The nation's first Chief Digital Officer in government, Rachel Haot [left], alongside NYC Mayor Michael Bloomberg.

NYC'S CHIEF DIGITAL OFFICER discusses borough-hopping with Google Maps and a secret obsession

What gadget do you depend on most?
My iPhone.

Which do you look back upon most fondly?
Macintosh II. I remember playing with Paint and a kids' adventure game called *The Manhole*.

Which company does the most to push the industry?
Right now, Google. From Glass to cars, they are pioneers creating new categories.

What is your operating system of choice?
iOS.

What are your favorite gadget names?
MakerBot, Raspberry Pi, Flux Capacitor.

"I remember playing with Paint and a kids' adventure game called *The Manhole*."

What are your least favorite?
TI-89.

Which app do you depend on most?
Google Maps. Gets me everywhere in the five boroughs of NYC and I love the experience and interface. Especially when I search for directions on my desktop and when I turn on my smartphone outside, it's queued up.

What traits do you most deplore in a smartphone?
Short battery life, bad web-browsing experience.

Which do you most admire?
Great camera. I love taking photos and Instagram is my secret obsession.

What is your idea of the perfect device?
Something beautiful that makes life easier and brings me closer to other people.

What is your earliest gadget memory?
Playing *Duck Hunt* on Nintendo with my friends at 7 years old.

What technological advancement do you most admire?
Electricity.

Which do you most despise?
Partially hydrogenated soybean oil.

What fault are you most tolerant of in a gadget?
Bad keyboards.

Which are you most intolerant of?
Bad cameras.

When has your smartphone been of the most help?
Creating a WiFi hotspot when I have none.

What device do you covet most?
Google Glass.

If you could change one thing about your phone what would it be?
A keyboard that types what I want to write.

What does being connected mean to you?
Feeling human.

When are you least likely to reply to an email?
When there is no response required.

When did you last disconnect?
My honeymoon — last July. D

IN REAL LIFE is an ongoing feature where we talk about the gadgets, apps and toys we're using in real life.

GOAL ZERO SHERPA 50

HTC One (Rogers)

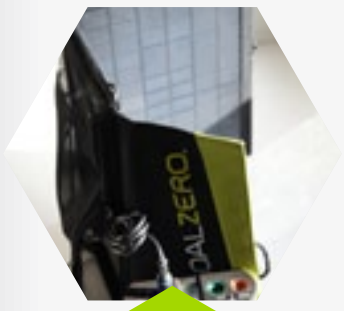
THE COLD, dark British winter finally seems to be receding into spring. This means all sorts of wonderful things, like beer gardens, blossoming flowers and longer days. All lovely, but what I'm most looking forward to is the fact that I can crack out the Goal Zero Sherpa 50 and its solar panel. Such is the life of a geek. Famously, you'll remember, solar panels require sun, so it's taken until now that I could make full use of it. Sure, the battery pack part has come in handy a bunch of times. In fact, it's become my go-to source of power on the go, even making its way over to Las Vegas with me in case of any CES outages (you never can be too sure) in weird foreign countries.

But, cool as that is, I get a special kick out of knowing I'm topping it (and my gadgets) up in an environmentally (and financially) guilt-free way. I've got no idea what my neighbors think is going on, but the magazine-sized, foldout solar panel has become a permanent fixture in my upstairs front window. In just the first week or so I managed two or three full charges of the battery pack (you can also charge your phone, etc. directly). Sadly, it's still nowhere near sunny enough to have reached its full charging performance, but that still represents a theoretical 20 or more phone recharges. Not bad at all.

Of course, what I'm really looking forward to is putting the solar part to even more appropriate use. With summer edging ever closer, that means festivals. And festivals typically require nursing your phone battery, rationing it out during the day, making you miss messages from friends. Or worse, navigating a crowded charging tent. With the Sherpa, I can recharge no matter how far I am from civilization. Not only that, but with the AC inverter, the whole kit could power almost anything. An electric blanket, perhaps? I mean, I say all this, but anyone who's ever been to a UK festival knows that there's still every chance I'll end up cold and phoneless by day two. No harm in being optimistic, though, is there?

— James Trew

HTC ONE (ROGERS)



Goal Zero Sherpa 50

IT FEELS LIKE a million bucks. That's a clichéd saying, I know, but I keep thinking it when I'm holding the HTC One in my hands. The design is just so solidly built that it feels less like a utilitarian machine and more like a luxury item that just happens to run Twitter. And yes, that fit and finish matter when choosing a smartphone. When it's a device you pick up many times a day, why shouldn't it feel special? The One is even relatively durable. Not that I'd want to drop it to test its limits, but it's definitely more resistant to nicks and scratches than most of the plastic phones I've tried, or even metal rivals like the iPhone 5.

The UltraPixel camera also feels like a wise trade-off. While the Galaxy S 4 and iPhone 5 can

indeed capture better images in good lighting, I'm not always lucky enough to have those sorts of conditions. I'm snapping photos in dim bars and concert halls, after all, not just brightly lit gardens. The One's camera thrives in those trickier situations, and ultimately I find I'd rather have a lower-resolution snapshot than a blurry or noisy high-resolution image. HTC's device is better-balanced than the other low-light champion, the Lumia 920, with more accurate colors and more extensive shot control. About my only real complaint centers on the frequently gimmicky nature of Zoe Share, although it has more practicality than Samsung's many special-case modes, like Drama Shot. If nothing else, it produces elegant highlight videos.

Performance on the Rogers LTE network is fast — very fast, in a few cases. I usually reached around 13 Mbps to 15 Mbps downstream here in Ottawa, but saw bursts to as much as 45 Mbps, and uploads reliably hovered around 10 Mbps. The data speeds are a good complement to what's already a very quick phone. I'd add that the One on Rogers doesn't face a bloatware epidemic on the level of the Sony Xperia ZL. Carrier apps that exist on the One aren't thrust upon the user with quite so much force.

What holds me back from giving the One an unreserved recommendation? It's not battery life (reasonable for me) or expansion (valuable to some); it's kinks in the software. I like Sense overall, but HTC has still made many eccentric interface choices that demand some retraining for Android veterans. The minimal-yet-powerful camera app is rivaled by the awkwardly organized gallery, for example, while the beautiful widgets are undermined by an interface that complicates the basic act of changing wallpapers. Although I suspect most people won't mind the lack of a multitasking button, or having to either accept or hide BlinkFeed, I'd strongly suggest that would-be One adopters try a working unit just to make sure that they can live with Sense. — *Jon Fingas*

The week that was in 140 characters or less

Keynote Clockwatchers, Vegan Values and the Same Old Song

DISTRO 05.17.13 | ESC | REHASHED

@inafried

I thought laptop battery might die due to length of #googleio keynote; didn't think the warranty would expire too.

@stevekovach

BBM on Android and iOS. Now there's really no reason to buy a BlackBerry.

@typewriteralley

I don't know any vegans who would eat "in vitro" meat. Do you?

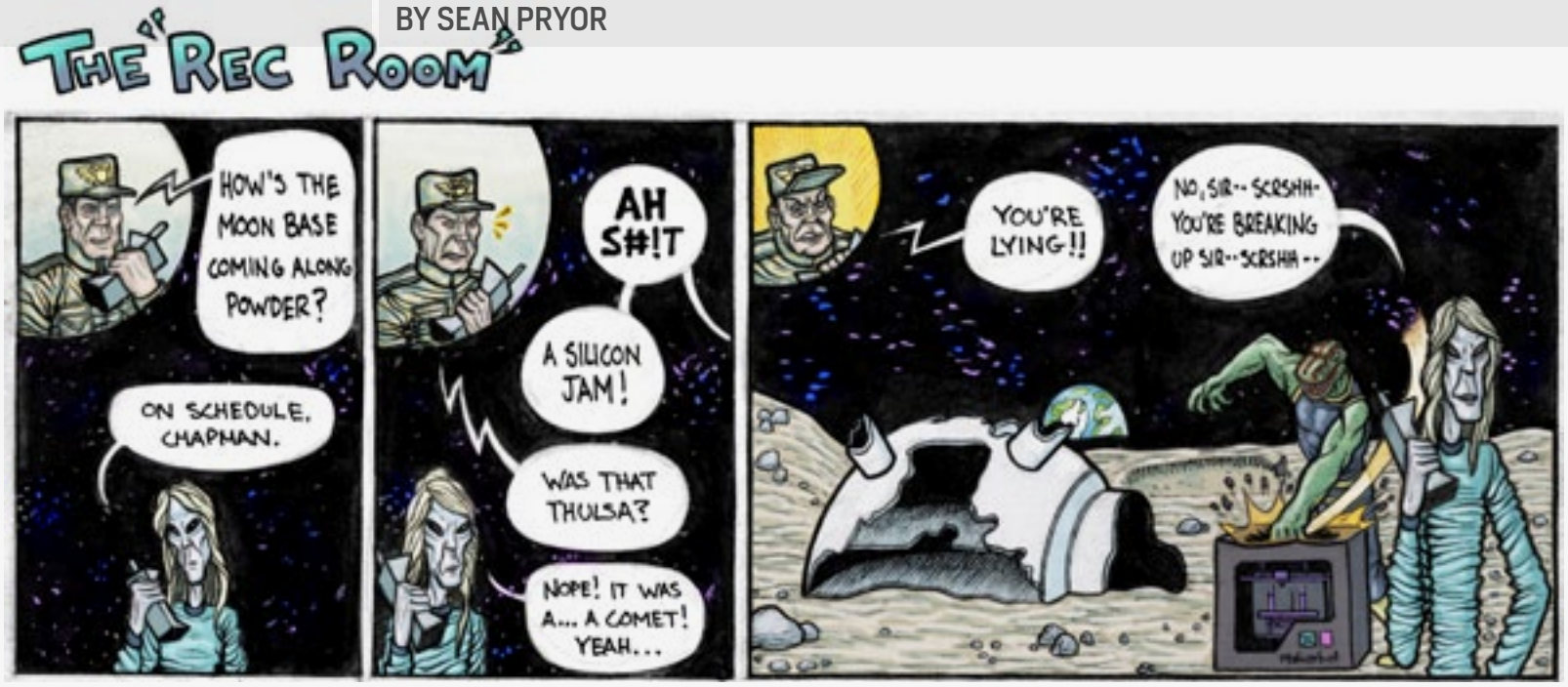
@mollywood

Man. All Access tanked with that audience. Honestly, it's because we already have this service 3 ways from Sunday. #io13

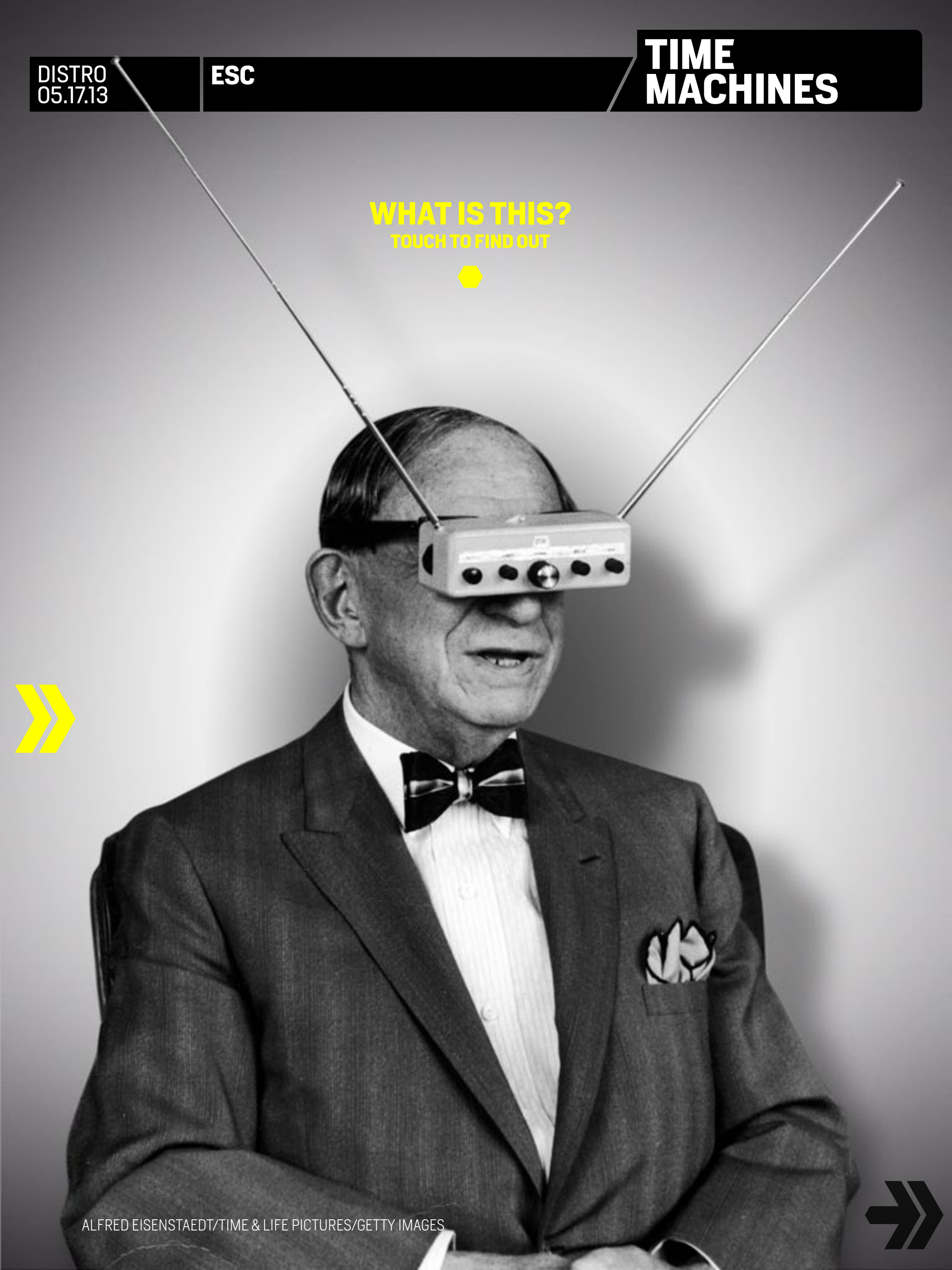
@WhatTheBit

Christ, the Lumia 925 is so incredibly pretty. Why oh why does it have to run an operating system that no one wants?

THE STRIP | BY SEAN PRYOR



TIME MACHINES



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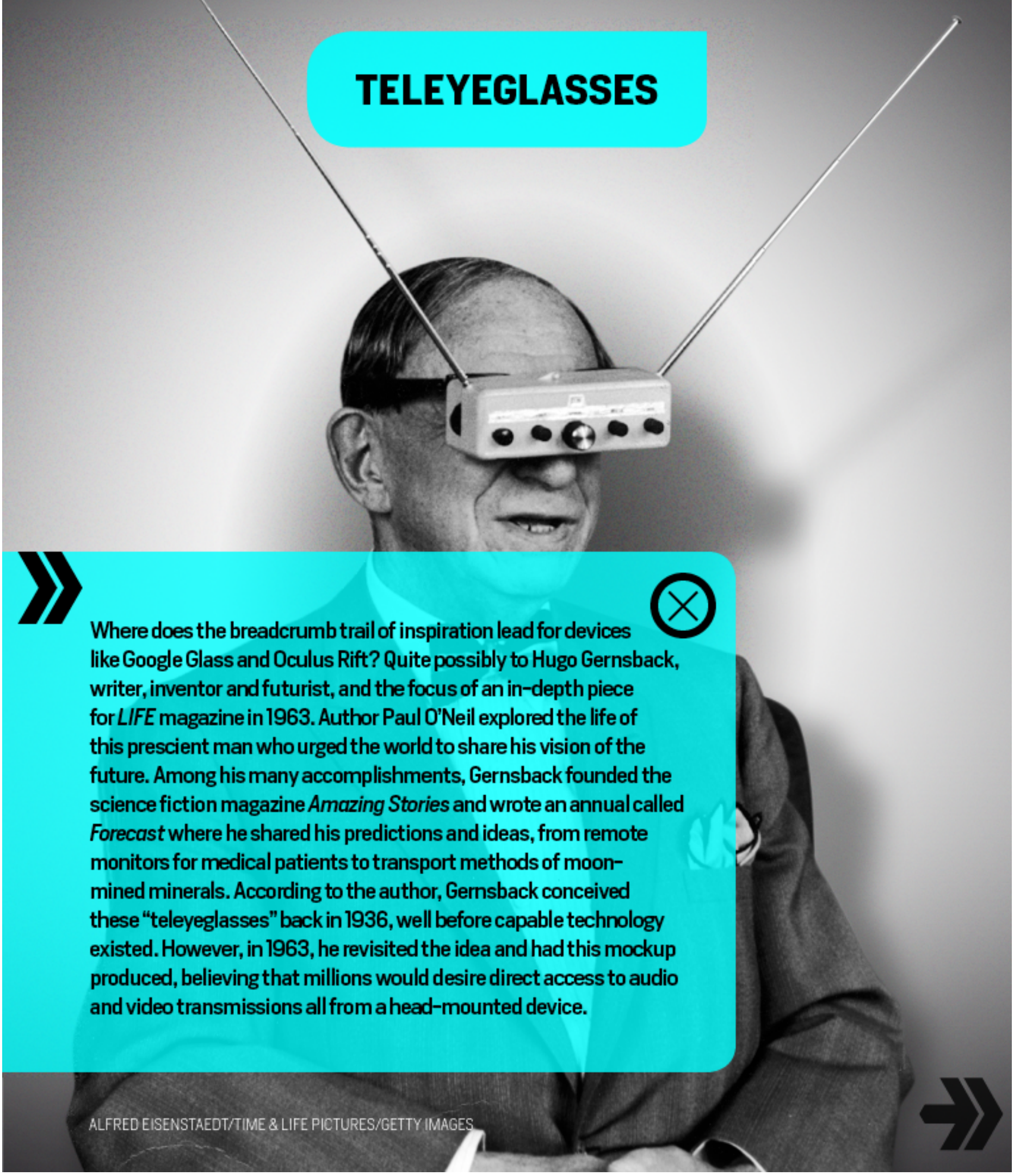
TELEYEGLASSES



Where does the breadcrumb trail of inspiration lead for devices like Google Glass and Oculus Rift? Quite possibly to Hugo Gernsback, writer, inventor and futurist, and the focus of an in-depth piece for *LIFE* magazine in 1963. Author Paul O'Neil explored the life of this prescient man who urged the world to share his vision of the future. Among his many accomplishments, Gernsback founded the science fiction magazine *Amazing Stories* and wrote an annual called *Forecast* where he shared his predictions and ideas, from remote monitors for medical patients to transport methods of moon-mined minerals. According to the author, Gernsback conceived these "teleyeglasses" back in 1936, well before capable technology existed. However, in 1963, he revisited the idea and had this mockup produced, believing that millions would desire direct access to audio and video transmissions all from a head-mounted device.

ALFRED EISENSTAEDT/TIME & LIFE PICTURES/GETTY IMAGES

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